**382 Chapter 8:** Data Structures and CAATTs for Data Extraction

## File Organization

For the following situations, indicate the most appropri- ate type of file organization. Explain your choice.

* 1. A local utility company has 80,000 residential custo- mers and 10,000 commercial customers. The monthly billings are staggered throughout the month and, as a

what is the average number of records that must be searched?

**CYLINDER INDEX**

**SURFACE INDEX CYLINDER**

result, the cash receipts are fairly uniform throughout the month. For 99 percent of all accounts, one check per month is received. These receipts are recorded in a

###### Key Range

**Cylinder Number**

**Key Range**

**Surface Number**

batch file, and the customer account records are up- dated biweekly. In a typical month, customer inquiries are received at the rate of about twenty per day.

* 1. A national credit card agency has 12 million cus- tomer accounts. On average, 30 million purchases and 700,000 receipts of payments are processed per day. Additionally, the customer support hot line pro- vides information to approximately 150,000 credit card holders and 30,000 merchants per day.
  2. An airline reservation system assumes that the trav- eler knows the departing city. From that point, fares and flight times are examined based on the destina- tion. Once a flight is identified as being acceptable to the traveler, then the availability is checked and, if necessary, a seat is reserved. The volume of transac- tions exceeds one-half million per day.
  3. A library system stocks more than 2 million books and has 30,000 patrons. Each patron is allowed to check out five books. On average, there are

1.3 copies of each title in the library. Over 3,000 books are checked out each day, with approxi- mately the same amount being returned daily. The check-outs are posted immediately, as well as any returns of overdue books by patrons who wish to pay their fines.

## Structured Query Language

The vice president of finance has noticed in the aging of the accounts receivable that the amount of overdue ac- counts is substantially higher than anticipated. He wants to investigate this problem. To do so, he requires a re- port of overdue accounts containing the attributes shown in the top half of the of Problem 3 table on the next page. The bottom half of the table contains the data fields and relevant files in the relational database system. Further, he wants to alert the salespeople of any custo- mers not paying their bills on time. Using the SQL com- mands given in this chapter, write the code necessary to generate a report of overdue accounts that are greater than $5,000 and more than 30 days due. Each customer has an assigned salesperson.

## Virtual Storage Access Method

Using the index provided explain, step-by-step, how the Key 12987 would be found using the virtual storage access method. Once a surface on a cylinder is located,

2,000 44 12,250 0

4,000 45 12,500 1

6,000 46 12,750 2

8,000 47 13,000 3

10,000 48 13,250 4

12,000 49 13,500 5

14,000 50 14,750 6

16,000 51 15,000 7

18,000 52

20,000 53

## Hashing Algorithm

The systems programmer uses a hashing algorithm to determine storage addresses. The hashing structure is 9,997/key. The resulting number is then used to locate the record. The first two digits after the decimal point represent the cylinder number, while the second two digits represent the surface number. The fifth, sixth, and seventh digits after the decimal point represent the record number. This algorithm results in a unique ad- dress 99 percent of the time. What happens the remain- der of the time when the results of the algorithm are not unique? Explain in detail the storage process when Key=3 is processed first, Key=2307 at a later date, and shortly thereafter Key=39.

## Normalization of Data

On the next page is a table of data for a library. Normal- ize these data into the third normal form, preparing it for use in a relational database environment. The li- brary’s computer is programmed to compute the due date to be 14 days after the check-out date. Document the steps necessary to normalize the data similar to the procedures found in the chapter. Add foreign keys and show how the databases are related.

## Normalization of Data

On page 388 is a table of data for a veterinary practice. Normalize this data into the third normal form, prepar- ing it for use in a relational database environment. Indi- cate the primary keys and embedded foreign keys in the tables.



Appendix



# OVERVIEW OF REVENUE CYCLE ACTIVITIES AND DOCUMENTS

#### In this appendix, we examine the revenue cycle conceptually. Using data flow diagrams (DFDs) as a guide, we will trace the sequence of activities through three processes that constitute the revenue cycle for most retail, wholesale, and manufacturing organizations. These are sales order procedures, sales return procedures, and cash receipts procedures. Service companies such as hospitals, insurance companies, and banks would use different industry-specific methods.

This discussion is intended to be technology-neutral. In other words, the tasks de- scribed may be performed manually or by computer. The focus is on what (conceptually) needs to be done, not how (physically) it is accomplished. At various stages in the pro- cesses we will examine specific documents, journals, and ledgers as they are encountered. Again, this review is technology-neutral. These documents and files may be physical (hard copy) or digital (computer-generated). In the main text, we examine examples of physical computer based systems.

Sales Order Procedures

#### Sales order procedures include the tasks involved in receiving and processing a customer order, filling the order and shipping products to the customer, billing the customer at the proper time, and correctly accounting for the transaction. The relationships between these tasks are presented with the DFD in Figure 9.12 and described in the following section.

***Receive Order.*** The sales process begins with the receipt of a **customer order** indicat- ing the type and quantity of merchandise desired. At this point, the customer order is not in a standard format and may or may not be a physical document. Orders may arrive by mail, by telephone, or from a field representative who visited the customer. When the customer is also a business entity, the order is often a copy of the customer’s purchase order. A purchase order is an expenditure cycle document, which is discussed in Chapter 10.

Because the customer order is not in the standard format that the seller’s order processing system needs, the first task is to transcribe it into a formal **sales order,** an example of which is presented in Figure 9.13.

The sales order captures vital information such as the customer’s name, address, and account number; the name, number, and description of the items sold; and the quantities and unit prices of each item sold. At this point, financial information such as taxes, discounts, and freight charges may or may not be included. After creating the sales order, a copy of it is placed in the **customer open order file** for future reference. The task of filling an order and getting the product to the customer may take days or even weeks. During this period, customers may contact their suppliers to check the status of their orders. The customer record in the open order file is updated each time the status of the order changes such as credit approval, on back-order, and shipment. The open

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**DFD of Sales Order Processing System**

**FIGURE 9 . 12**

Sales Order (Credit Copy)

|  |  |
| --- | --- |
| **Customer** | Customer Order |
|  |
|  |

**Check Credit**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Credit Records** | |
| Credit Approval | | |  |

**AR Subsidiary Ledger**

Total Amount Due

**Receive**

Packing Slip and

Bill of Lading

Packing Slip and Shipping Notice

Received Date, Approved Date

**Open Order File**

**Order**

Stock Release

Insufficient Quantity

Sales Order (invoice copy)

Approved Sales Order

S.O.

**S.O. Pending File**

Invoice Copy

Sales Order (Ledger Copy)

**Update Account Receivable Records**

AR

Summary

**Post to General Ledger**

**Journal Voucher**

**File (General Journal)**

Approved Journal Vouchers

JV Posting

Details

Shipped Date, Back- order Status

**Pick Goods**

Verified

Product

**Back-Order File**

**Bill Customer**

Sales Journal voucher

Reviewed Stock Release

**General**

**Ledger Records**

**Update** Journal

**Ship Goods**

Shipping Details

Stock Release

and Quantity

Shipping Notice

**Stock Records**

Sales Details

**Sales Journal**

**Inventory Records**

Product and

Quantity Sold

**Inventory Subsidiary Ledger**

Voucher



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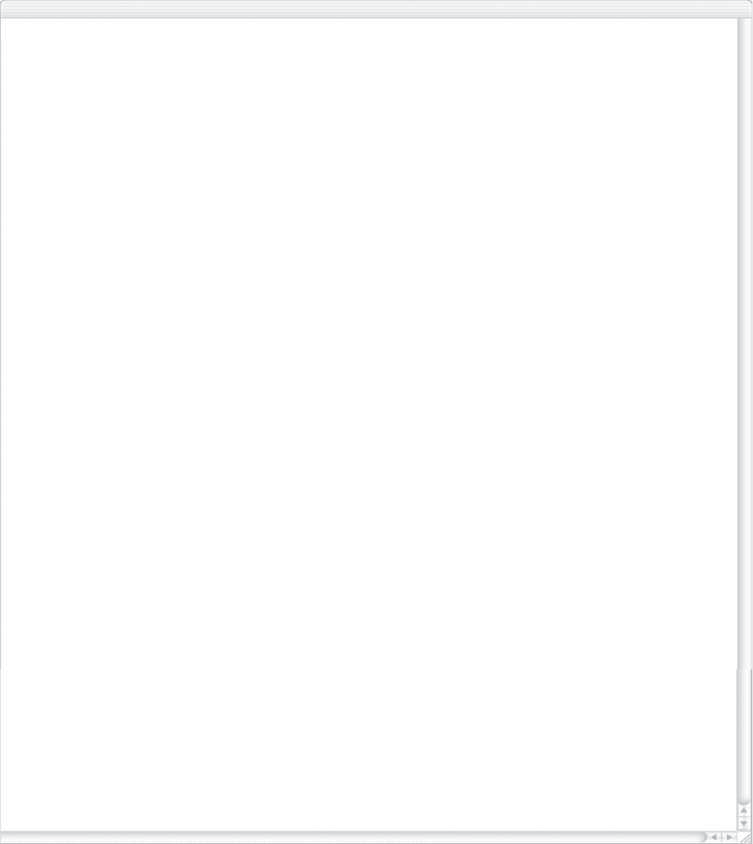
Appendix: Overview of Revenue Cycle Activities and Documents

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**Shipping Log**

Sales Invoice

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CREDIT SALE INVOICE

MONTEREY PENINSULA CO-OP

527 River Road

Chicago, IL 60612

(312) 555-0407

INVOICE NUMBER

SOLD TO

FIRM NAME ATTENTION OF ADDRESS CITY STATE ZIP

INVOICE DATE PREPARED BY CREDIT TERMS

CUSTOMER PURCHASE ORDER NUMBER DATE SIGNED BY

SHIPMENT DATE SHIPPED VIA

B.O.L. NO.

**FIGURE 9 . 13**

###### Sales Order

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| QUANTITY ORDERED | PRODUCT NUMBER | DESCRIPTION | QUANTITY SHIPPED | UNIT PRICE | TOTAL |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  | TOTAL SALE | | |
|  |  |  | CUSTOMER ACCT. NO. | | |
|  |  |  | VERIFICATION | | |

order file thus enables customer service employees to respond promptly and accurately to customer questions.

***Check Credit.*** Before processing the order further, the customer’s creditworthiness needs to be established. The circumstances of the sale will determine the nature and degree of the credit check. For example, new customers may undergo a full financial investigation to establish a line of credit. Once a credit limit is set, however, credit checking on subse- quent sales may be limited to ensuring that the customer has a history of paying his or her bills and that the current sale does not exceed the preestablished limit.

The credit approval process is an authorization control and should be performed as a function separate from the sales activity. In our conceptual system, the receive-order task sends the **sales order (credit copy)** to the check-credit task for approval. The

Appendix: Overview of Revenue Cycle Activities and Documents **439**

#### returned **approved sales order** then triggers the continuation of the sales process by releasing sales order information simultaneously to various tasks. Several documents mentioned in the following sections, such as the stock release, packing slip, shipping notice, and sales invoice, are simply special-purpose copies of the sales order and are not illustrated separately.

***Pick Goods.*** The receive order activity forwards the **stock release** document (also called the picking ticket) to the pick goods function, in the warehouse. This document identifies the items of inventory that must be located and picked from the warehouse shelves. It also provides formal authorization for warehouse personnel to release the spec- ified items. After picking the stock, the order is verified for accuracy and the goods and **verified stock release** document are sent to the ship goods task. If inventory levels are insufficient to fill the order, a warehouse employee adjusts the verified stock release to reflect the amount actually going to the customer. The employee then prepares a **back-order** record, which stays on file until the inventories arrive from the supplier (not shown in Figure 9.14). Back-ordered items are shipped before new sales are processed.

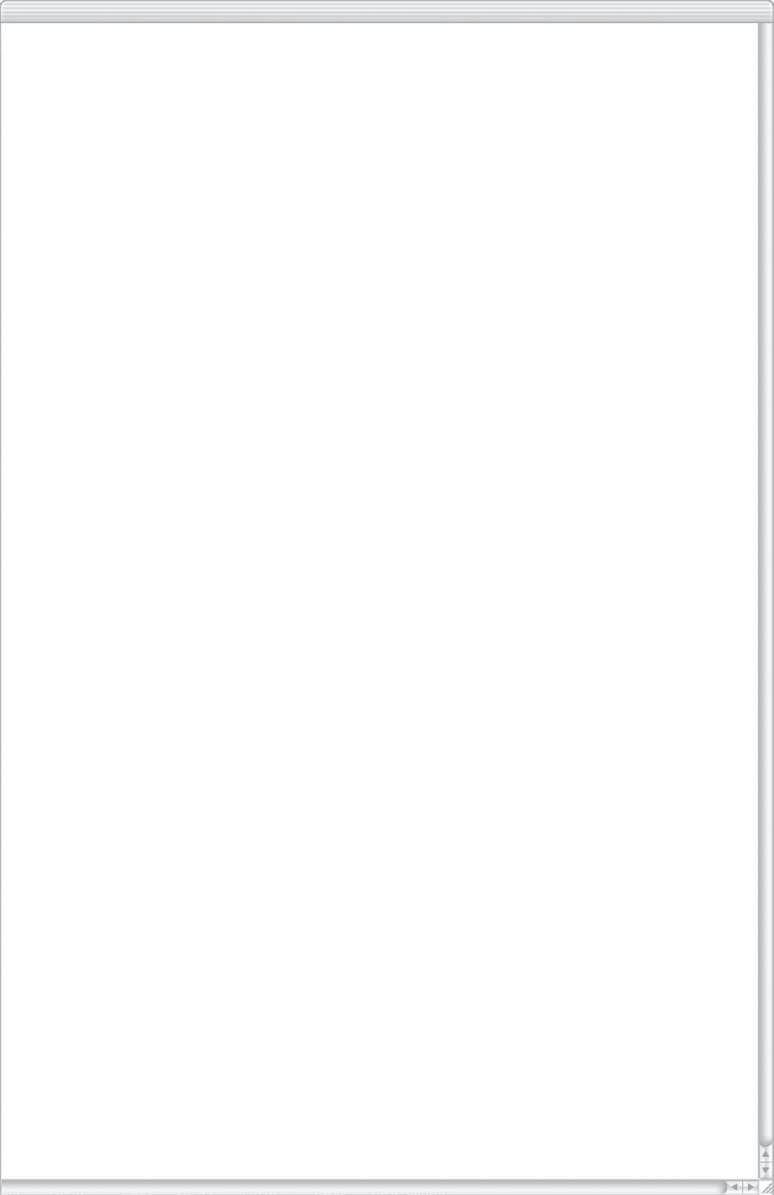
Finally, the warehouse employee adjusts the **stock records** to reflect the reduction in inventory. These stock records are not the formal accounting records for controlling inventory assets. They are used for warehouse management purposes only. Assigning asset custody and accounting record-keeping responsibility to the warehouse clerk would violate a key principle of internal control. The inventory control function, discussed later, maintains the formal accounting inventory records.

***Ship Goods.*** Before the arrival of the goods and the verified stock release document, the shipping department receives the **packing slip** and **shipping notice** from the receive order function. The packing slip will ultimately travel with the goods to the customer to describe the contents of the order. The shipping notice will later be for- warded to the billing function as evidence that the customer’s order was filled and shipped. This document conveys pertinent new facts such as the date of shipment, the items and quantities actually shipped, the name of the carrier, and freight charges. In some systems, the shipping notice is a separate document prepared within the ship- ping function.

Upon receiving the goods from the warehouse, the shipping clerk reconciles the physical items with the stock release, the packing slip, and the shipping notice to ver- ify that the order is correct. The ship goods function thus serves as an important independent verification control point and is the last opportunity to detect errors before shipment. The shipping clerk packages the goods, attaches the packing slip, completes the shipping notice, and prepares a **bill of lading**. The bill of lading, as shown in Figure 9.14, is a formal contract between the seller and the shipping company (carrier) to transport the goods to the customer. This document establishes legal ownership and responsibility for assets in transit. Once the goods are transferred to the carrier, the ship- ping clerk records the shipment in the shipping log, forwards the shipping notice and the stock release to the bill-customer function as proof of shipment, and updates the custo- mer’s open order file.

***Bill Customer.*** The shipment of goods marks the completion of the economic event and the point at which the customer should be billed. Billing before shipment encourages inaccurate record keeping and inefficient operations. When the customer order is origi- nally prepared, some details such as inventory availability, prices, and shipping charges may not be known with certainty. In the case of back-orders, for example, suppliers do not typically bill customers for out-of-stock items. Billing for goods not shipped causes

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**FIGURE 9 . 14**

###### Bill of Lading

Monterey Peninsula Co-Op 527 River Road

Chicago, IL 60612

(312) 555-0407

TO:

Consignee Street City/State Zip Code

Document No.

Shipper No. Carrier No. Date

(Name of Carrier)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Route: | | Vehicle | | |
| No. Shipping Units | Kind of packaging, description of articles,  special marks and exceptions |  | | |
| Weight | Rate | Charges |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

TOTAL CHARGES $

|  |  |
| --- | --- |
| The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding:  $ per | IF WITHOUT RECOURSE:  The carrier shall not make delivery of this shipment without payment of freight  (Signature of Consignor) |
| FREIGHT CHARGES  Check appropriate box: [ ] Freight prepaid  [ ] Collect  [ ] Bill to shipper | Signature below signifies that the goods described above are in apparent good order, except as noted. Shipper hereby certifies that he is familiar with all the bill of lading terms and agrees with them. |
| SHIPPER Monterey Peninsula Co-op | CARRIER |
| PER | PER DATE |

(This bill of lading is to be signed by the shipper and agent of the carrier issuing same.) CONSIGNEE

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#### confusion, damages relations with customers, and requires additional work to make adjustments to the accounting records.

To prevent such problems, the billing function awaits notification from shipping before it bills. Figure 9.12 shows that upon credit approval, the bill-customer function receives the **sales order (invoice copy)** from the receive order task. This document is placed in an **S.O. pending file** until receipt of the shipping notice, which describes the products that were actually shipped to the customer. Upon arrival, the items shipped are reconciled with those ordered and unit prices, taxes, and freight charges are added to the invoice copy of the sales order. The completed **sales invoice** is the customer’s bill, which formally depicts the charges to the customer. In addition, the billing function performs the following record-keeping-related tasks:

* Records the sale in the sales journal.
* Forwards the ledger copy of the sales order to the “update accounts receivable” task.
* Sends the stock release document to the update inventory records task.

The **sales journal** is a special journal used for recording completed sales transac- tions. The details of sales invoices are entered in the journal individually. At the end of the period, these entries are summarized into a **sales journal voucher**, which is sent to the general ledger task for posting to the following accounts:

|  |  |  |
| --- | --- | --- |
|  | **DR** | **CR** |
| Accounts Receivable—Control  Sales | XXXX.XX | XXXX.XX |

Figure 9.15 illustrates a **journal voucher**. Each journal voucher represents a general journal entry and indicates the general ledger accounts affected. Summaries of transac- tions, adjusting entries, and closing entries are all entered into the general ledger via this method. When properly approved, journal vouchers are an effective control against un- authorized entries to the general ledger. The journal voucher system eliminates the need for a formal general journal, which is replaced by a **journal voucher file**.

***Update Inventory Records.*** The inventory control function updates **inventory sub- sidiary ledger** accounts from information contained in the stock release document. In a

|  |  |  |  |
| --- | --- | --- | --- |
| Journal Voucher Number: *JV6-03*  Date: *10/7/2009* | | | |
| Account Number | Account Name | Amount DR. CR. | |
| *20100*  *50200* | *Accounts Receivable Sales* | *5,000* | *5,000* |
| Explanation: *to record total credit sales for 10/7/2009* | | | |
| Approved by: *JRM* Posted by: *MJJ* | | | |

**FIGURE 9 . 15**

###### Journal Voucher

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**FIGURE 9 . 16**

###### Inventory Subsidiary Ledger

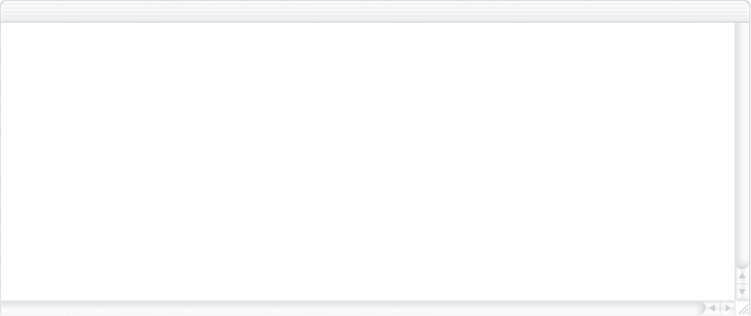
|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Item Description | Date | Units Received | Units Sold | Qnty On Hand | Reorder Point | EOQ | Qnty On Order | Purch Order # | Vendor Number | Standard Cost | Total Inven.  Cost |
| *3" Pulley* | *9/15* |  | *50* | *950* | *200* | *1,000* | *–* | *–* | *–* | *2* | *1,900* |
|  | *9/18* |  | *300* | *650* |  |  |  |  |  |  | *1,300* |
|  | *9/20* |  | *100* | *550* |  |  |  |  |  |  | *1,100* |
|  | *9/27* |  | *300* | *250* |  |  |  |  |  |  | *500* |
|  | *10/1* |  | *100* | *150* | *200* | *1,000* | *1,000* | *87310* | *851* | *2* | *300* |
|  | *10/7* | *1,000* |  | *1,150* |  |  | *–* |  |  |  | *2,300* |

perpetual inventory system, every inventory item has its own record in the ledger con- taining, at a minimum, the data depicted in Figure 9.16. Each stock release document reduces the quantity on hand of one or more inventory accounts. Periodically, the finan- cial value of the total reduction in inventory is summarized in a journal voucher and sent to the general ledger function for posting to the following accounts:



Perpetual Inventory Record – Item # *86329*

|  |  |  |
| --- | --- | --- |
|  | **DR** | **CR** |
| Cost of Goods Sold  Inventory—Control | XXX.XX | XXX.XX |

***Update Accounts Receivable.*** Customer records in the **accounts receivable (AR) subsidiary ledger** are updated from information the sales order (**ledger copy**) provides. Every customer has an account record in the AR subsidiary ledger containing, at mini- mum, the following data: customer name; customer address; current balance; available credit; transaction dates; invoice numbers; and credits for payments, returns, and allow- ances. Figure 9.17 presents an example of an AR subsidiary ledger record.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name: *Howard Supply* Account Number *1435*  Address: *121 Maple St.*  *Winona, tfY 18017* | | | | | | | | | |
|  | Date | Explanation | Invoice Number | Payment (CR) | Sale (DR) | Account Balance | Credit Limit | Available Credit |  |
| *9/27* | *3"" Pulley*  *(300 Units)* | *92131* |  | *600.00* | *600.00* | *1000.00* | *400.00* |
| *10/7* |  |  | *600.00* |  | *0.00* |  | *1000.00* |

**FIGURE 9 . 17**

**Accounts Receivable Subsidiary Ledger**

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#### Periodically, the individual account balances are summarized in a report that is sent to the general ledger. The purpose for this is discussed next.

***Post to General Ledger.*** By the close of the transaction processing period, the gen- eral ledger function has received journal vouchers from the billing and inventory control tasks and an account summary from the AR function. This information set serves two purposes. First, the general ledger uses the journal vouchers to post to the following control accounts:

|  |  |  |
| --- | --- | --- |
|  | **DR** | **CR** |
| Accounts Receivable Control Cost of Goods Sold  Inventory Control | XXXX.XX XXX.XX | XXX.XX |
| Sales |  | XXXX.XX |

Because general ledger accounts are used to prepare financial statements, they con- tain only summary figures (no supporting detail) and require only summary posting information. Second, this information supports an important independent verification control. The AR summary, which the AR function independently provides, is used to verify the accuracy of the journal vouchers from billing. The AR summary figures should equal the total debits to AR reflected in the journal vouchers for the transac- tion period. By reconciling these figures, the general ledger function can detect many types of errors. We examine this point more fully in a later section dealing with revenue cycle controls.

**Sales Return Procedures**



An organization can expect that a certain percentage of its sales will be returned. This occurs for a number of reasons, some of which may be:

* The company shipped the customer the wrong merchandise.
* The goods were defective.
* The product was damaged in shipment.
* The buyer refused delivery because the seller shipped the goods too late or they were

delayed in transit.

When a return is necessary, the buyer requests credit for the unwanted products. This involves reversing the previous transaction in the sales order procedure. Using the DFD in Figure 9.18, let’s now review the procedures for approving and processing returned items.

***Prepare Return Slip.*** When items are returned, the receiving department employee counts, inspects, and prepares a **return slip** describing the items. The goods, along with a copy of the return slip, go to the warehouse to be restocked. The employee then sends the second copy of the return slip to the sales function to prepare a credit memo.

***Prepare Credit Memo.*** Upon receipt of the return slip, the sales employee prepares a **credit memo**. This document is the authorization for the customer to receive credit for the merchandise returned. Note that the credit memo illustrated in Figure 9.19, is similar

###### DFD of Sales Return Procedures



**Customer**

**Approve Credit Memo**

**AR Subsidiary Ledger**

Credit Credit

Memo Data

Packing Slip

**Prepare Return Slip**

Return Slip Copy 1

Approved Credit Memo

**Update AR**

**Prepare Credit Memo**

**Records**

AR Summary

Return

Slip Copy 2

Approved Credit Memo

Approved Credit Memo

**Restock Goods**

Sales

Contra Entry

Product Quantity Replaced

**Update Sales Journal**

Approved Credit Memo

**Update**

**Inventory**

**Records**

Product Quantity Replaced

Inventory Journal Voucher

**Stock Records**

**Sales Journal**

**Inventory Subsidiary Ledger**

Sales Return Journal Voucher

**Update General Ledger**

Posting Data

Approved

**General Ledger** Journal Vouchers

**Records**

**Journal Voucher File**

**FIGURE 9 . 18**

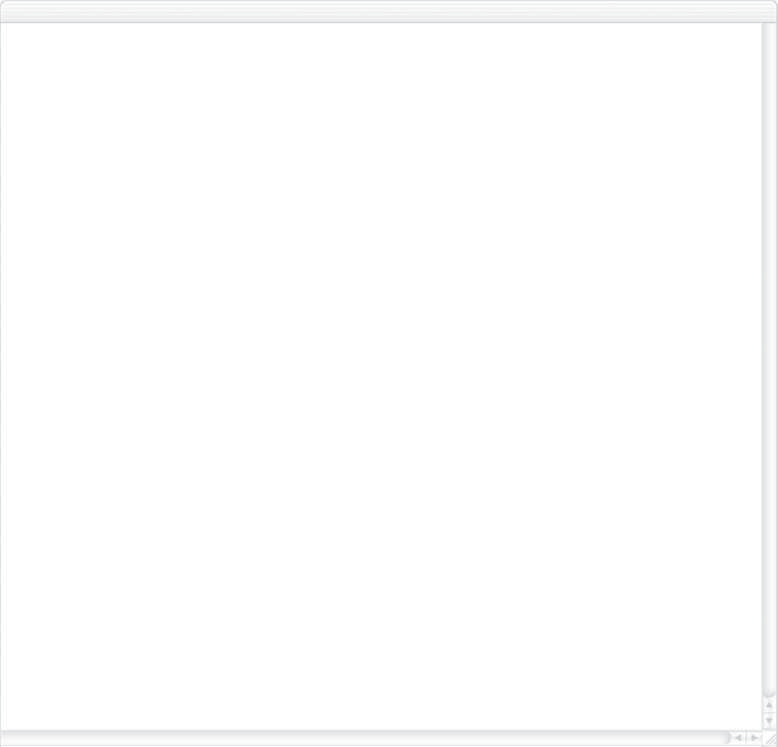
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###### Credit Memo



Credit Memo

Monterey Peninsula Co-Op 527 River Road

Chicago, IL 60612

(312) 555-0407

Customer

Invoice #

Received from Reason for Return

Address City State Zip

**FIGURE 9 . 19**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product Number | Description | Quantity Returned | Unit Price | Total |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Approved By: | | | Total Credit | |

in appearance to a sales order. Some systems may actually use a copy of the sales order marked credit memo.

In cases in which specific authorization is required (that is, the amount of the return or circumstances surrounding the return exceed the sales employee’s general authority to approve), the credit memo goes to the credit manager for approval. How- ever, if the clerk has sufficient general authority to approve the return, the credit memo is sent directly to the billing function, where the customer sales transaction is reversed.

***Approve Credit Memo.*** The credit manager evaluates the circumstances of the re- turn and makes a judgment to grant (or disapprove) credit. The manager then returns the **approved credit memo** to the sales department.

***Update Sales Journal.*** Upon receipt of the approved credit memo, the transaction is recorded in the sales journal as a contra entry. The credit memo is then forwarded to the

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#### inventory control function for posting. At the end of the period, total sales returns are summarized in a journal voucher and sent to the general ledger department.

***Update Inventory and AR Records.*** The inventory control function adjusts the in- ventory records and forwards the credit memo to AR, where the customer’s account is also adjusted. Periodically, inventory control sends a journal voucher summarizing the total value of inventory returns to the general ledger update task. Similarly, accounts re- ceivable submits an AR account summary to the general ledger function.

***Update General Ledger.*** Upon receipt of the journal voucher and account summary information, the general ledger function reconciles the figures and posts to the following control accounts:

|  |  |  |
| --- | --- | --- |
|  | **DR** | **CR** |
| Inventory—Control  Sales Returns and Allowances Cost of Goods Sold | XXXX.XX XXX.XX | XXX.XX |
| Accounts Receivable—Control |  | XXXX.XX |

**Cash Receipts Procedures**



The sales order procedure described a credit transaction that resulted in the establish- ment of an account receivable. Payment on the account is due at some future date, which the terms of trade determine. Cash receipts procedures apply to this future event. They involve receiving and securing the cash; depositing the cash in the bank; matching the payment with the customer and adjusting the correct account; and prop- erly accounting for and reconciling the financial details of the transaction. The DFD in Figure 9.20 shows the relationship between these tasks. They are described in detail in the following section.

***Open Mail and Prepare Remittance Advice.*** A mail room employee opens envel- opes containing customers’ payments and **remittance advices**. Remittance advices (see Figure 9.21) contain information needed to service individual customers’ accounts. This in- cludes payment date, account number, amount paid, and customer check number. Only the portion above the perforated line is the remittance advice, which the customer removes and returns with the payment. In some systems, the lower portion of the document is a customer statement that the billing department sends out periodically. In other cases, this could be the original customer invoice, which was described in the sales order procedures.

The remittance advice is most apparent in firms that process large volumes of cash receipts daily. For example, processing a check from John Smith with no supporting details would require a time-consuming and costly search through perhaps thousands of records to find the correct John Smith. This task is greatly simplified when the cus- tomer provides necessary account number and posting information. Because of the pos- sibility of transcription errors and omissions, however, sellers do not rely on their customers to provide this information directly on their checks. Errors are avoided and operational efficiency is greatly improved when using remittance advices.

Mail room personnel route the checks and remittance advices to an administrative clerk who endorses the checks “For Deposit Only” and reconciles the amount on each remittance advice with the corresponding check. The clerk then records each check on a form called a **remittance list** (or cash prelist), where all cash received is logged. In this example, the clerk prepares three copies of the remittance list. The original copy is sent



Payment

Amount Received

**AR Subsidiary Ledger**

**Customer**

Check and Remittance Advice

**Update AR**

**Records**

AR Summary

**Journal Voucher File**

**Open Mail,**

**Prepare Remittance Advice**

Remittance Advice and Remittance List

Approved Journal

**Update General Ledger**

Vouchers

Cancelled Check

Remittance List

Copy

Check and Remittance List

**Record and Deposit Checks**

Posting Data

Cash receipts Journal Voucher

Returned Deposit Slips

**Reconcile Cash Receipts**

**and Deposits**

**General Ledger Records**

Approved Journal Vouchers

Remittance List

**Journal Voucher File**

**Cash Receipts Journal**

Check and Deposit Slip

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###### DFD of Cash Receipts Procedure

**FIGURE 9 . 20**

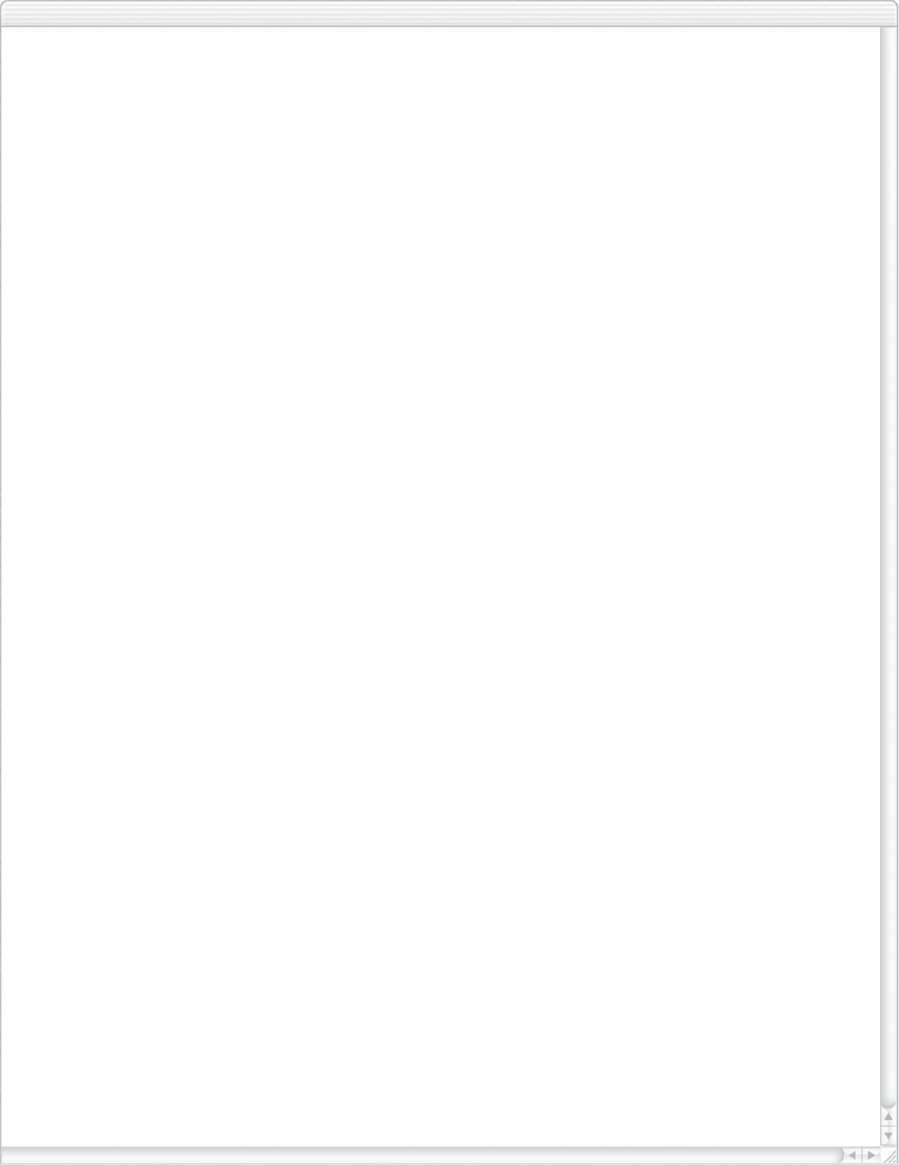
**Bank**

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**FIGURE 9 . 21**

###### Remittance Advice

Send To:



Monterey Peninsula Co-Op 527 River Road

Chicago, IL 60612

(312) 555-0407

Page: 1

Remittance Advice:

Date

Customer No. Amount Pd. Check No.

|  |  |  |  |
| --- | --- | --- | --- |
| 10/4/09 | 811901 | *125.00* | *2002* |

Please return the upper portion with your payment — Thank You

To:

John Smith

R.D. #2, Box 312

Prunedale, CA 09278–5704

Due Date Customer No. Amount Due

|  |  |  |
| --- | --- | --- |
| 10/10/09 | 811901 | 125.00 |

Date

Invoice Number Description Amount Due

Previous Bal. 300.00 Payments 300.00

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 9/28/09 | 6112115  Thank you for gi | Cleaning Supplies  ving Monterey Peninsula the opportuni | 125.00  ty to serve you |  |

Sales 125.00

Late Fees — Tax — Ending Bal. 125.00

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###### Cash Receipts Journal

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cash Receipts Journal | | | | | | | | |
| Date | Account | Post Ref | Check # | Cash  Acct. # 101 (Debit) | Sales Discounts Acct. # 430 (Debit) | Accounts Receivable Acct. # 102 | Sales Acct. # 401 Credit | Sundry Accounts Debit (Credit) |
| *9/3* | *Capital Stock* | *301* | *2150* | *14,000* |  |  |  | *14,000* |
| *9/5* | *Ogment Supply* |  | *6712* | *2,970* | *30* | *3,000* |  |  |
| *9/9* | *Marvin Co.* |  | *3491* | *1,000* |  |  | *1,000* |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

with the checks to the record and deposit checks function. The second copy goes with the remittance advices to the update AR function. The third goes to a reconciliation task.

**FIGURE 9 . 22**

***Record and Deposit Checks.*** A cash receipts employee verifies the accuracy and completeness of the checks against the prelist. Any checks possibly lost or misdirected between the mail room and this function are thus identified. After reconciling the prelist to the checks, the employee records the check in the **cash receipts journal**. All cash re- ceipts transactions, including cash sales, miscellaneous cash receipts, and cash received on account, are recorded in the cash receipts journal. Figure 9.22 illustrates this with an example of each type of transaction. Notice that each check received from a customer is listed as a separate line item.

Next, the clerk prepares a bank **deposit slip** showing the amount of the day’s re- ceipts and forwards this along with the checks to the bank. Upon deposit of the funds, the bank teller validates the deposit slip and returns it to the company for reconciliation. At the end of the day, the cash receipts employee summarizes the journal entries and sends the following journal voucher entry to the general ledger function.

|  |  |  |
| --- | --- | --- |
|  | **DR** | **CR** |
| Cash  Accounts Receivable Control | XXXX.XX | XXXX.XX |

***Update Accounts Receivable.*** The remittance advices are used to post to the custo- mers’ accounts in the AR subsidiary ledger. Periodically, the changes in account balances are summarized and forwarded to the general ledger function.

***Update General Ledger.*** Upon receipt of the journal voucher and the account sum- mary, the general ledger function reconciles the figures, posts to the cash and AR control accounts, and files the journal voucher.

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#### ***Reconcile Cash Receipts and Deposits.*** Periodically (weekly or monthly), a clerk from the **controller’s** office (or an employee not involved with the cash receipts pro- cedures) reconciles cash receipts by comparing the following documents: (1) a copy of the prelist, (2) deposit slips received from the bank, and (3) related journal vouchers.



**KEY TERMS**

accounts receivable (AR) subsidiary ledger analytical review

batch control totals bill of lading

confirmation of accounts receivable controller

credit authorization credit memo

customer open order file customer order

cycle billing events database

inventory subsidiary ledger ledger copy

negative confirmation open-invoice system packing slip

positive confirmation reengineering remittance advices remittance list

return slip sales invoice

sales invoice file sales journal voucher sales order

shipping notice

stock release (picking ticket)



**REVIEW QUESTIONS**

1. What document initiates the sales process?
2. Distinguish between a packing slip, a shipping notice, and a bill of lading.
3. What are three input controls?
4. What are the three rules that ensure that no single employee or department processes a transaction in its entirety?
5. What is automation, and why is it used?
6. What is the objective of reengineering?
7. Distinguish between an edit run, sort run, and update run.
8. How is the record’s primary key critical in preserv- ing the audit trail?
9. What are the advantages of real-time processing?
10. Why does billing receive a copy of the sales order when the order is approved but does not bill until the goods are shipped?
11. How do tests of controls relate to substantive tests?
12. In a manual system, after which event in the sales process should the customer be billed?
13. What is a bill of lading?
14. What document initiates the billing process?
15. Where in the cash receipts process does supervi- sion play an important role?
16. List the revenue cycle audit objectives derived from the “existence or occurrence” management assertion.
17. List the revenue cycle audit objectives derived from the “completeness” management assertion.
18. List the revenue cycle audit objectives derived from the “accuracy” management assertion.

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# DISCUSSION QUESTIONS

#### Distinguish between the sales, billing, and AR de- partments. Why can’t the sales or AR depart- ments prepare the bills?

* 1. Explain the risks associated with mailroom pro- cedures.
  2. How could an employee embezzle funds by issu- ing an unauthorized sales credit memo if the ap- propriate segregation of duties and authorization controls were not in place?
  3. What task can the AR department engage in to verify that all checks sent by the customers have been appropriately deposited and recorded?
  4. Why is access control over revenue cycle docu- ments just as important as the physical control devices over cash and inventory?
  5. For a batch processing system using sequential files, describe the intermediate and permanent files that are created after the edit run has suc- cessfully been completed when processing the sales order file and updating the accounts receiv- able and inventory master files.
  6. Why has the use of magnetic tapes as a storage medium declined in recent years? What are their primary uses currently?
  7. Discuss both the tangible and intangible benefits of real-time processing.
  8. Distinguish between positive and negative confir- mations.
  9. What is the purpose of analytical reviews in the audit of revenue cycle accounts?
  10. Explain the open-invoice system. What effect might it have on confirmation responses?
  11. What financial statement misrepresentations may result from an inconsistently applied credit pol- icy? Be specific.
  12. Give three examples of access control in a POS system.
  13. What makes POS systems different from revenue cycles of manufacturing firms?
  14. Is a POS system that uses bar coding and a laser light scanner foolproof against inaccurate up- dates? Discuss.



**MULTIPLE-CHOICE QUESTIONS**

* + 1. Which document is *not* prepared by the sales department?
       1. packing slip
       2. shipping notice
       3. bill of lading
       4. stock release
    2. Which document triggers the update of the inventory subsidiary ledger?
       1. bill of lading
       2. stock release
       3. sales order
       4. shipping notice
    3. Which function should *not* be performed by the billing department?
       1. recording the sales in the sales journal
       2. sending the ledger copy of the sales order to accounts receivable
       3. sending the stock release document and the shipping notice to the billing department as proof of shipment
       4. sending the stock release document to inven- tory control
    4. When will a credit check approval most likely require specific authorization by the credit department?
       1. when verifying that the current transaction does not exceed the customer’s credit limit
       2. when verifying that the current transaction is with a valid customer
       3. when a valid customer places a materially large order
       4. when a valid customer returns goods
    5. Which type of control is considered to be a com- pensating control?
       1. segregation of duties
       2. access control
       3. supervision
       4. accounting records
    6. Which of the following is *not* an output control?
       1. The shipping department verifies that the goods sent from the warehouse are correct in type and quantity.
       2. General ledger clerks reconcile journal vou- chers that were independently prepared in various departments.

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#### The sales clerk uses pre-numbered sales orders.

* + - 1. The billing department reconciles the ship- ping notice with the sales invoice to ensure that customers are billed only for the quanti- ties shipped.
    1. Which function or department below records the decrease in inventory due to a sale?
       1. warehouse
       2. sales department
       3. billing department
       4. inventory control
    2. Which situation indicates a weak internal control structure?
       1. the AR clerk authorizes the write off of bad debts
       2. the record-keeping clerk maintains both AR and AP subsidiary ledgers
       3. the inventory control clerk authorizes inven- tory purchases
       4. the AR clerk prepares customer statements every month
    3. The bill of lading is prepared by the
       1. sales clerk.
       2. warehouse clerk.
       3. shipping clerk.
       4. billing clerk.
    4. Which of following functions should be segregated?
       1. opening the mail and recording cash receipts in the journal
       2. authorizing credit and determining reorder quantities
       3. shipping goods and preparing the bill of lading
       4. providing information on inventory levels and reconciling the bank statement



**PROBLEMS**

1. **Process Description**

Describe the procedures, documents, and departments involved when insufficient inventory is available to fill a customer’s approved order.

1. **Process Description**

Refer to Figure 9.1 and explain where the batch totals come from and which accounts in the general ledger are affected by the end-of-day batch process.

## Flowchart Analysis

Use the flowchart for Problem 3 to answer these questions:

* 1. What accounting document is represented by symbol A?
  2. What is an appropriate name for the department labeled B?
  3. What would be an appropriate description for pro- cess C?
  4. What is the location represented by symbol D?
  5. What accounting record is represented by symbol E?
  6. What is an appropriate name for the department labeled H?
  7. What device is represented by symbol F?
  8. What device is represented by symbol G?
  9. What accounting record is represented by symbol G?

## Internal Control Evaluation

Identify the control weaknesses depicted in the flow- chart for Problem 4.

## Segregation of Functions

Which, if any, of the following situations represent im- proper segregation of functions?

* 1. The billing department prepares the customers’ in- voices, and the AR department posts to the custo- mers’ accounts.
  2. The sales department approves sales credit memos as the result of product returns, and subsequent adjust- ments to the customer accounts are performed by the AR department.
  3. The shipping department ships goods that have been retrieved from stock by warehouse personnel.
  4. The general accounting department posts to the gen- eral ledger accounts after receiving journal vouchers that are prepared by the billing department.

## Internal Controls

CMA 688 5-2

Jem Clothes, Inc., is a twenty-five-store chain concen- trated in the Northeast that sells ready-to-wear clothes for young men and women. Each store has a full-time manager and an assistant manager, both of whom are paid a salary. The cashiers and sales personnel are typ- ically young people working part-time who are paid an hourly wage plus a commission based on sales volume. The Problem 6 flowchart on page 459 depicts the flow of a sales transaction through the organiza- tion of a typical store. The company uses unsophisti- cated cash registers with four-part sales invoices to record each transaction. These sales invoices are used regardless of the payment type (cash, check, or bank card).

On the sales floor, the salesperson manually re- cords his or her employee number and the transaction (clothes, class, description, quantity, and unit price),

###### Problem 3: Flowchart Analysis

Mail Room **B H**

1

Customer

Checks

Remittance Advice

Remittance Advice

Separate Checks and Remittance Advices

**F**

Checks G

A



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Remittance

Advice **C E**

1 Checks

**D**



Customer Order

Customer Order

SO

Ledger Copy

B

A

C

Sales Clerk Prepares Various Sales Order (SO) Copies and Posts to Journal

SO Stock Copy

SO GL

Copy

Adds Prices and Bills Customer

SO

Ledger Copy

Remit Advice

Check

Sales Journal

SO Invoice Copy

SO Ledger Copy

SO GL

Copy

SO Stock Copy

SO Ledger

Copy

Remit Advice

Check

SO

Invoice Copy

Updates

AR and

Journal

Picks and

Ships Goods, Updates

Ledger

Inventory Sub Ledger

SO

Stock Copy

Updates AR and Journal

General Ledger

Customer

AR Sub Ledger

Carrier

C

A

B

Cash Rec Journal

Check

Bank

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###### Problem 4: Internal Control Evaluation

Customer Sales Department Billing Accounts Receivable Warehouse General Ledger

###### Problem 6: Internal Controls

Salesperson

Cashier Assistant Manager Manager Corporate Headquarters

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From Customer

To Customer

Return Slip Reconcile

Validated 1 Invoice

(Customer)

Validated 2 Invoice (Store)

Cash Check

Validated 3

Invoice (Bank Card)

and

Prepare

Report

Cash Check

3

Sales Invoice

Prepare

Cash Check

To Bank

Deposit

Sales Invoice

Deposit Slip

3

Total Cash Receipts

Sequentially Ordered Invoices

Tape

Return Slip

Validated Deposit Slip

Tape

Invoice

2

2

Reconciliation Report

File

D

From Bank

Process

1

Reconciliation

Report

Sales and

Review

Comission

Activity Report

File

D

Prepare Sales Invoice

4

3

Retained in

Sales Book

3

2

2

Sales 1 Invoice

Sales Invoice

1

Approve Sale

and Process

Assign Consecutive Number

Payment

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totals the sales invoice, calculates the discount when ap- propriate, calculates the sales tax, and prepares the grand total. The salesperson then gives the sales invoice to the cashier, retaining one copy in the sales book.

The cashier reviews the invoice and inputs the sale. The cash register mechanically validates the invoice by automatically assigning a consecutive number to the transaction. The cashier is also responsible for getting credit approval on charge sales and approving sales paid by check. The cashier gives one copy of the invoice to the customer and retains the second copy as a store copy and the third for a bank card, if a deposit is needed. Returns are handled in exactly the reverse man- ner, with the cashier issuing a return slip.

At the end of each day, the cashier sequentially or- ders the sales invoices and takes cash register totals for cash, bank card, and check sales, and cash and bank card returns. These totals are reconciled by the assistant manager to the cash register tapes, the total of the con- secutively numbered sales invoices, and the return slips. The assistant manager prepares a daily reconciliation re- port for the store manager’s review.

Cash, check, and bank card sales are reviewed by the manager, who then prepares the daily bank deposit (bank card sales invoices are included in the deposit). The manager makes the deposit at the bank and files the validated deposit slip.

The cash register tapes, sales invoices, and return slips are then forwarded daily to the central data processing department at corporate headquarters for pro- cessing. The data processing department returns a weekly sales and commission activity report to the manager for review.

*Required:*

1. Identify six strengths in the Jem Clothes system for controlling sales transactions.
2. For each strength identified, explain what problem(s) Jem Clothes has avoided by incorporating the strength in the system for controlling sales transactions.

Use the following format in preparing your answer.

1. *Strength* 2. *Problem(s) Avoided*

## Stewardship

Identify which department has stewardship over the fol- lowing journals, ledgers, and files:

* 1. Customer open order file
  2. Sales journal
  3. Journal voucher file
  4. Cash receipts journal
  5. Inventory subsidiary ledger
  6. AR subsidiary ledger
  7. Sales history file
  8. Shipping report file
  9. Credit memo file
  10. Sales order file
  11. Closed sales order file

## Control Weaknesses

For the past 11 years, Elaine Wright has been an employee of the Star-Bright Electrical Supply store. Elaine is a very diligent employee who rarely calls in sick and takes her vacation days staggered throughout the year so that no one else gets bogged down with her tasks for more than one day. Star-Bright is a small store that employs only four people other than the owner. The owner and one of the employees help customers with their electrical needs. One of the employees handles all receiving, stocking, and ship- ping of merchandise. Another employee handles the pur- chasing, payroll, general ledger, inventory, and accounts payable functions. Elaine handles all of the point-of-sale cash receipts and prepares the daily deposits for the busi- ness. Furthermore, Elaine opens the mail and deposits all cash receipts (about 30 percent of the total daily cash re- ceipts). Elaine also keeps the AR records and bills the cus- tomers who purchase on credit.

##### *Required:*

* 1. Point out any control weaknesses you see in the above scenario.
  2. List some recommendations to remedy any weak- nesses you have found working under the constraint that no additional employees can be hired.

## Internal Control

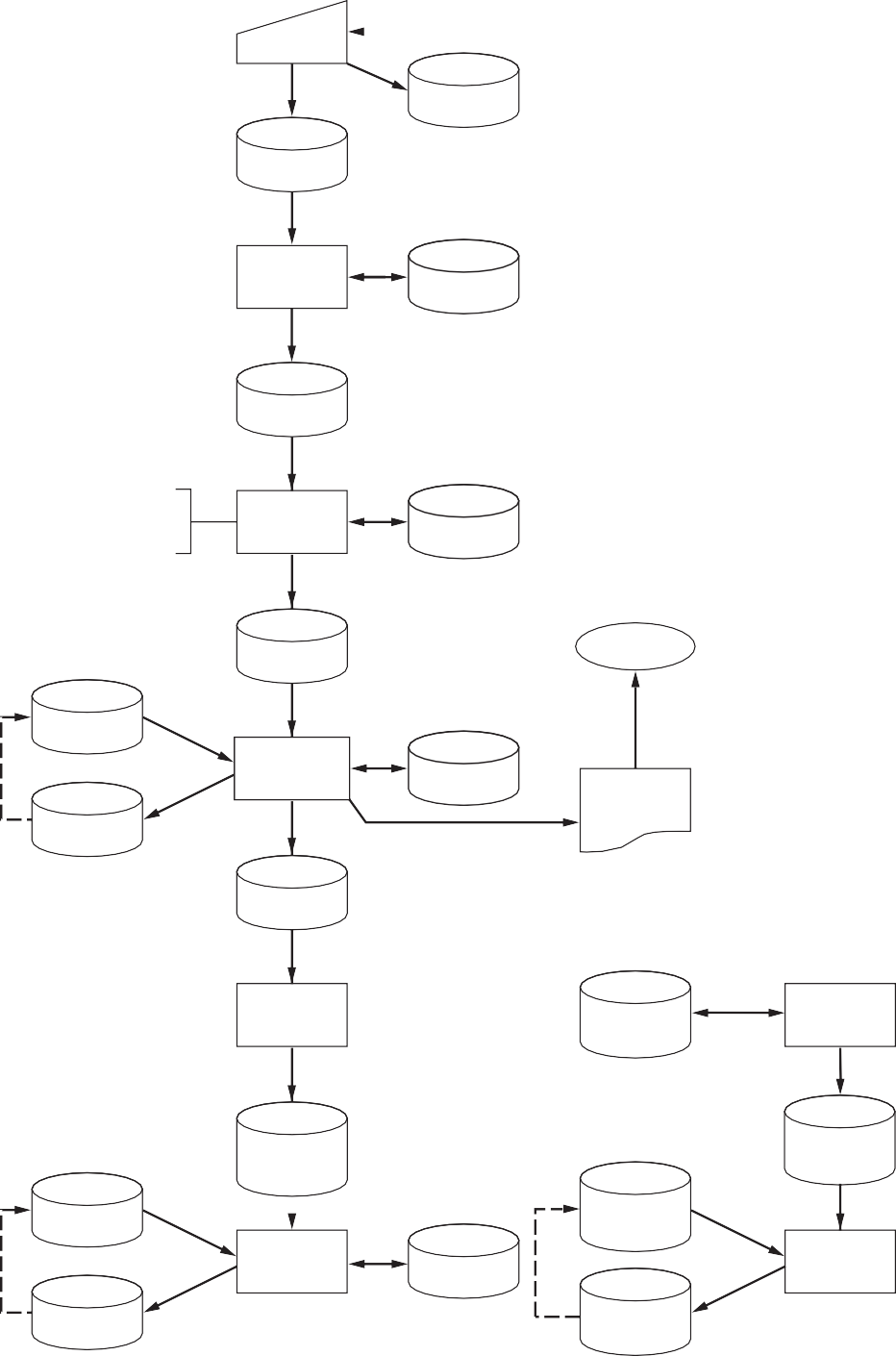
Iris Plant owns and operates three floral shops in Magnolia, Texas. The accounting functions have been performed manually. Each of the shops has a manager who oversees the cash receipts and purchasing functions for the shop. All bills are sent to the central shop and are paid by a clerk who also prepares payroll checks and maintains the general journal. Iris is seriously consider- ing switching to a computerized system. With so many information systems packages on the market, Iris is overwhelmed.

##### *Required:*

Advise Iris as to which business modules you think her organization could find beneficial. Discuss advan- tages, disadvantages, and internal control issues.

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###### Problem 11: Data Processing



Keystroke

Shipping

Notice

Batch Totals

Sales Order File

Edit

Batch Totals

Edited File

Sort sales order file by customer account number

Sort Program

Batch Totals

Sorted File

Customer

AR File

AR Update and Billing Program

Batch Totals

Customer's Invoice

New AR File

Sales Order

End of Day Process

Sort Run

Batch Totals

Sort Run

Sorted SO

File

Sorted Batch Totals

Inventory

Master File Update Program

General Ledger Accts

Batch Totals

Gen Ledger Update

New Inventory File

New GL File

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## Internal Control

You are investing your money and opening a fast-food Mexican restaurant that accepts only cash for payments. You plan on periodically issuing coupons through the mail and in local newspapers. You are particularly inter- ested in access controls over inventory and cash.

##### *Required:*

Design a carefully controlled system and draw a document flowchart to represent it. Identify and discuss the key control issues.

## Data Processing

The computer processing portion of a sales order system is represented by the Problem 11 flowchart on the fol- lowing page. Answer the following questions:

##### *Required:*

* 1. What type of data processing system is this? Explain, and be specific.
  2. The auditor suggests that this system can be greatly simplified by changing to direct access files. Explain the major operational changes that would occur in the system if this were done.
  3. The auditor warns of control implications from this change that must be considered. Explain the nature of the control implications.
  4. Sketch a flowchart (the computerized portion only) of the proposed new system. Use correct symbols and label the diagram.

## System Configuration

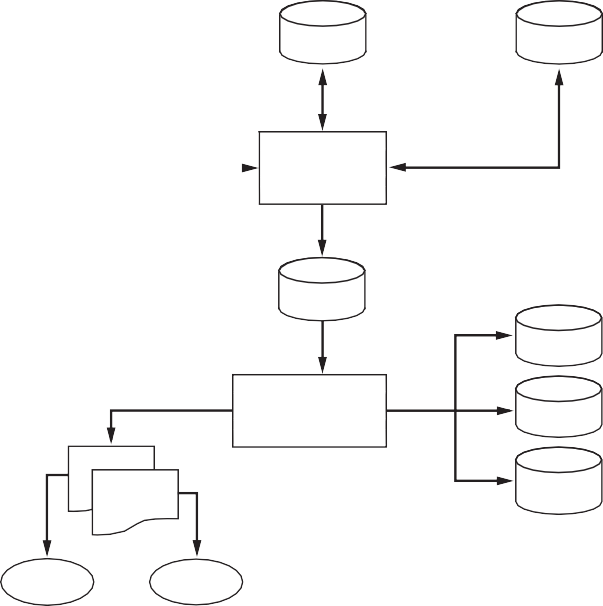
The flowchart for Problem 12 represents the computer processing portion of a sales order system. Answer the following questions.

* 1. What type of data processing system is this? Explain, and be specific.
  2. The marketing manager suggests that this system can be greatly improved by processing all files in real time. Explain the major operational changes that would occur in the system if this were done.
  3. The auditor warns of operational efficiency implica- tions from this change that must be considered. Explain the nature of these implications.
  4. Sketch a flowchart of the proposed new system. Use correct symbols and label the diagram.

###### Problem 12: System Configuration

Sales Department

Computer Operations



Customer

Customer Records

Inventory

Sales Order

Credit Check and

File Update

Sales Terminal

Sales Orders

Sales Journal

File Update and

Report System

General Ledger

Invoice

Sales Summary

Marketing

Customer

Marketing Dept.

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# INTERNAL CONTROL CASES

## Smith’s Market (Small Business POS Accounting System)

In 1989, Robert Smith opened a small fruit and vegetable market in Bethlehem, Pennsylvania. Originally, Smith sold only produce grown on his family farm and orchard. As the market’s popularity grew, however, he added bread, canned goods, fresh meats, and a limited supply of frozen goods. Today, Smith’s Market is a full-range farmers’ market with a strong local customer base. In- deed, the market’s reputation for low prices and high quality draws customers from other Pennsylvania cities and even from the neighboring state of New Jersey. Cur- rently Smith’s Market has forty employees. These include sales staff, shelf stockers, farm laborers, shift supervisors, and clerical staff. Recently Smith has noticed a decline in profits and sales, while his purchases of products for re- sale have continued to rise. Although the company does not prepare audited financial statements, Robert Smith has commissioned your public accounting firm to assess his company’s sales procedures and controls. Smith’s Market revenue cycle procedures are described in the fol- lowing paragraphs:

Customers push their shopping carts to the check- out register where a clerk processes the sale. The market has four registers, but they are not dedicated to specific sales clerks because the clerks play many rolls in the day- to-day operations. In addition to checking out custo- mers, sales clerks will stock shelves, unload delivery trucks, or perform other tasks as demand in various areas rises and falls throughout the day. This fluid work demand makes the assignment of clerks to specific registers impractical.

At the beginning of the shift, the shift supervisor collects four cash register drawers from the treasury clerk in an office in the back of the market. The drawers contain $100 each in small bills (known as float) to en- able the clerks to make change. The supervisor signs a log indicating that he has taken custody of the float and places the drawers into the respective cash registers.

Sales to customers are for cash, check, or credit card only. Credit card sales are performed in the usual way. The clerk swipes the card and obtains online ap- proval from the card issuer at the time of sale. The cus- tomer then signs the credit card voucher, which the clerk places in a special compartment of the cash register drawer. The customer receives a receipt for the purchase and a copy of the credit card voucher.

For payments by check, the clerk requires the cus- tomer to present a valid driver’s license. The license num- ber is added to the check and the check is matched against

a “black” list of customers who have previously passed bad checks. If the customer is not on the list, the check is ac- cepted for payment and placed in the cash register drawer. The clerk then gives the customer a receipt.

The majority of sales are for cash. The clerk re- ceives the cash from the customer, makes change, and issues a receipt for the purchase.

At the end of the shift, the supervisor returns the cash register drawers containing the cash, checks, and credit cards receipts to the treasury clerk and signs a log that he has handed in the cash drawers. The clerk later counts the cash and credit card sales. Using a standalone PC, he records the total sales amounts in the sales journal and the general Ledger Sales and Cash accounts. The Treasury clerk then prepares a deposit slip and delivers the cash, checks, and credit card vouchers to the local branch of the bank two blocks away from the market.

### *Required:*

1. Create a data flow diagram of the current system.
2. Create a system flowchart of the existing system.
3. Analyze the internal control weaknesses in the sys- tem. Model your response according to the six cat- egories of physical control activities specified in COSO.

## Spice Is Right Imports (Standalone PC-Based Accounting System)

Spice Is Right was established in 1990 in Boston, where it began importing exotic spices and cooking sauces from India and China. The company distributes these specialty foods to ethnic food shops, cafés, and restau- rants across the country. In addition to its Boston head- quarters and warehouse, the company has a distribution center in Elizabeth, New Jersey. Spice Is Right currently employs over 100 people, has dozens of suppliers, and trades in hundreds of ethnic and exotic foods from all over the world.

Recently Spice Is Right has been receiving com- plaints from customers and suppliers about billing, ship- ping, and payment errors. Management believes that these complaints stem, in part, from an antiquated com- puter system. Spice’s current information system in- cludes manual procedures supported by independent (nonnetworked) PCs in each department, which cannot communicate with each other. Document flows between the departments is entirely in hard-copy form. The fol- lowing is a description of its revenue cycle at the Boston headquarters office.

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### *Sales Procedures*

Spice Is Right’s revenue cycle begins when a customer places an order with a sales representative by phone or fax. A sales department employee enters the customer order into a standard sales order format using a word processor installed on a PC to produces six documents: three copies of sales orders, a stock release, a shipping notice, and a packing slip. The accounting department receives a copy of the sales order, the warehouse receives the stock release and a copy of the sales order, and the shipping department receives a shipping notice and packing slip. The sales clerk files a copy of the sales or- der in the department.

Upon receipt of the sales order, the accounting de- partment clerk manually prepares an invoice and sends it to the customer. Using data from the sales order, the clerk then enters the sale in the department PC and re- cords the sale in the sales journal and in the AR subsidi- ary ledger. At the end of the day, the clerk prepares a hard-copy sales journal voucher, which is sent to the general ledger department.

The warehouse receives a copy of the sales order and stock release. A warehouse employee picks the prod- uct and sends it to the shipping department, along with the stock release. A warehouse clerk updates the inven- tory records on the warehouse PC and files sales order in the warehouse. At the end of the day, the clerk prepares a hard-copy AR account summary and sends it to the general ledger department.

The shipping department receives a shipping no- tice and packing slip from the sales department. The shipping notice is filed. Upon receipt of the stock re- lease, the shipping clerk prepares the two copies of a bill of lading using a word processor. The bills of lading and the packing slip are sent with the product to the carrier. The clerk then files the stock release in the department.

The general ledger clerk posts the journal voucher and inventory summary to the general ledger, which is stored on the department PC; the clerk then files these documents in the general ledger department.

### *Cash Receipts Procedure*

The mailroom has five employees who open and sort all mail. Each employee has two bins, one for remittance advices and one for checks. Before separating the two documents and putting them in their respective bins, the clerks reconcile the amounts on the checks and re- mittance advices.

The remittance advices are sent to the accounting department, where a clerk records each remittance ad- vice on a remittance list. The remittance list is then sent to the cash receipts department. Using the remittance advices, the accounting clerk updates the customer

accounts receivable on the department PC and files the advice in the department. At the end of the day the clerk prepares an account summery on the PC. A hard copy of the summary is sent to the general ledger department.

The mailroom clerk sends the checks to the cash receipts department, where a clerk endorses each check with the words “For Deposit Only.” Next, the clerk re- conciles the checks with the remittance list and records the cash receipts in the cash receipts journal on the de- partment PC. Finally, the clerk prepares a deposit slip and sends it and the checks to the bank.

The general ledger posts the AR summary to gen- eral ledger and files it in the general ledger department.

##### *Required:*

1. Create a data flow diagram of the current system.
2. Create a system flowchart of the existing system.
3. Identify the internal control weaknesses in the sys- tem. Use the six categories of physical control ac- tivities specified in COSO for your analysis.
4. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses that you identified in “c” above.

## ABE Plumbing, Inc. (Centralized Small Business Accounting System)

ABE Plumbing, Inc., opened its doors in 1979 as a whole-

sale supplier of plumbing equipment, tools, and parts to hardware stores, home-improvement centers, and profes- sional plumbers in the Allentown–Bethlehem–Easton metropolitan area. Over the years, the company has expanded its operations to serve customers across the nation and now employs over 200 people as technical representatives, buyers, warehouse workers, and sales and office staff. Most recently, ABE has experienced fierce competition from the large online discount stores such as Harbor Freight and Northern Supply. In addition, the company is suffering from operational inefficien- cies related to its archaic information system. ABE’s revenue cycle procedures are described in the following paragraphs:

### *Revenue Cycle*

ABE’s sales department consists of seventeen full-time and part-time employees. They receive orders via tradi- tional mail, e-mail, telephone, and the occasional walk-in. Because ABE is a wholesaler, the vast majority of its busi- ness is conducted on a credit basis. The process begins in the sales department, where the sales clerk enters the cus- tomer’s order into the centralized computer sales order system. The computer and file server is housed in ABE’s small data processing department.

If the customer has done business with ABE in the past, his or her data are already on file. If the customer is a first-time buyer, however, the clerk creates a new record

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in the customer file. The system then creates a record of the transaction in the open sales order file. When the order is entered, an electronic copy of it is sent to the customer’s e-mail address as confirmation.

A clerk in the warehouse department periodically re- views the open sales order file from a terminal and prints two copies of a stock release document for each new sale, which he uses to pick the items sold from the shelves. The warehouse clerk sends one copy of the stock release to the sales department and the second copy, along with the goods, to the shipping department. The warehouse clerk then up- dates the inventory subsidiary file to reflect the items and quantities shipped. Upon receipt of the stock release docu- ment, the sales clerk accesses the open sales order file from a terminal, closes the sales order, and files the stock release document in the sales department. The sales order system automatically posts these transactions to the sales, inventory control, and cost-of-goods sold accounts in the general led- ger file.

Upon receipt of the goods and the stock release, the shipping department clerk prepares the goods for ship- ment to the customer. The clerk prepares three copies of the bill of lading. Two of these go with the goods to the carrier and the third, along with the stock release docu- ment, is filed in the shipping department.

The billing department clerk reviews the closed sales orders from a terminal and prepares two copies of the sales invoice. One copy is mailed to the customer and the other is filed in the billing department. The clerk then creates a new record in the account receivable subsidiary file. The sales order system automatically updates the account receivable control account in the general ledger file.

ABE has hired your public accounting firm to re- view is sales order procedures for internal control com- pliance and to make recommendations for changes.

##### *Required:*

* + - 1. Create a data flow diagram of the current system.
      2. Create a system flowchart of the existing system.
      3. Analyze the internal control weaknesses in the sys- tem. Model your response according to the six cat- egories of physical control activities specified in the COSO control model.
      4. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses that you identified.

## Walker Books, Inc. (Manual System with Minimal PC Support)

### *(Prepared by Matt Wisser, Lehigh University)*

*Company Background*

Walker Books, Inc., is the fastest-growing book distrib- utor in the United States. Established in 1981 in Palo Alto, California, Walker Books was originally a side

project of founder and current president Curtis Walker, who at the time was employed by a local law firm. Be- cause reading was much more than just a hobby of his, he decided to use some of his savings to buy an aban- doned restaurant and convert it into a neighborhood bookstore, mainly selling used books that were donated and obtained from flea markets. When the doors first opened, Walker’s wife, Lauren, was the only employee during the week and Curtis worked weekends. At the end of the first fiscal year, Walker Books had grossed

$20,000 in sales.

As the years passed, Curtis Walker quit the law firm and began concentrating fully on his bookstore. He hired more employees, more books were traded in, and sales increased annually. During the mid-1990s, however, Walker was faced with two problems: many large, upscale bookstores were being built in the area, and the use of the Internet for finding and ordering books was becoming cheaper and more popular for current customers. In 1995, Walker’s sales started to decline. Deciding to take a risk because of the new- found competition, he closed his doors to the neigh- borhood, invested more money to expand the current property, and transformed his company from simply selling used books to being a distributor of new books. His business model was to obtain books from publish- ers at a discount, store them in his warehouse, and resell them to large bookstore chains.

Walker Books, Inc., has rapidly become one of the largest book distributors in the country. Although it is still at its original location in Palo Alto, California, it distributes books to all 50 states and, because of that, now sees gross sales of about $105,000,000 per year. When Mr. Walker is asked about his fondest memory, he always responds that he will never forget how the little bookstore, with two employees, has expanded to now have more than 145 employees.

Under his current business model, all of Walker’s customers are large-chain bookstores who themselves net many millions of dollars in revenue per year. Some of these customers, however, are now experiencing pro- blems with Walker Books that threaten their business relationship: books are ordered but not sent, Walker’s poor inventory management causes stock-outs, and Walker is commonly unable to provide legitimate docu- mentation of transactions.

One potential source of these problems rests with Walker’s antiquated accounting system, which is a com- bination of manual procedures supported by standalone PC work stations. These computers are not networked and cannot share data between departments. All interde- partmental communication takes place through hard- copy documents.

You have been hired as an independent expert to express an opinion on the appropriateness of Walker

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Books’ business processes and internal controls. The rev- enue cycle is described below:

### *Revenue Cycle*

*Sales Order Processing System*

The sales order process begins when a customer calls in his or her order to an experienced sales representative, who then manually transcribes the necessary customer information, ISBN, and quantity and type of books re- quested onto a formal customer order document. Be- cause of recent problems the company has had with uncollectable accounts, Walker Books has set up a com- puter terminal in the department so the sales represen- tative can check the customer’s credit with an online credit bureau. If the credit rating falls below the sales representative’s expectations, the transaction is disal- lowed; if the sales representative concludes, however, that the credit rating is acceptable, he proceeds to man- ually prepare five hard copies of the sales order.

Once prepared, one copy of the sales order is sent to the warehouse to be used as the stock release. Another copy of the sales order, the shipping notice, is sent to the shipping department. Two of the copies (invoice and ledger copies) are sent to the billing department, and the final copy of the sales order is stapled to the corre- sponding customer order, which is then filed in the sales department. Once the documents are sent to their desig- nated locations, the sales representative manually up- dates the hard-copy sales journal to record the transaction. At the end of the day, the sales representa- tive manually prepares a hard-copy journal voucher and sends it to the general ledger department.

When the warehouse clerk receives the stock re- lease copy, he reviews the document for clerical accu- racy. He then manually records the appropriate decrease in inventory in the hard-copy inventory sub- sidiary records that are maintained in the warehouse. Once recorded, he picks the goods and sends them and the stock release document to the shipping depart- ment. At the end of day, the warehouse clerk prepares a hard-copy account summary that he sends to the gen- eral ledger department.

The shipping clerk receives the shipping notice from the sales department and the stock release and goods from the warehouse. The clerk reconciles the documents with the books being shipped and, if all is correct, creates a digital bill of lading record using the shipping department personal computer. The computer automatically prints out a hard copy packing slip and bill of lading, which accompany the goods to the carrier. The shipping notice is then sent to the billing depart- ment and the stock release is filed in the shipping department.

The billing department clerk receives the customer invoice and ledger copy of the sales order from the sales department and the shipping notice from the shipping department. The billing clerk then adds prices and other charges to the invoice, which she sends to the customer. The clerk files the shipping notice in the department and sends the ledger copy to the AR department.

The clerk in the AR department receives ledger copy of the sales order and uses it to manually update the hard-copy AR subsidiary ledger. The clerk then files the ledger copy in the department. At the end of day, the AR clerk prepares an account summary and sends it to the general ledger department.

Upon the receipt of the journal vouchers and the AR summary, the general ledger department clerk re- conciles the documents and updates the appropriate control accounts in the digital general ledger via his computer terminal. The documents are then filed in the department.

### *Cash Receipts System*

The cash receipts process begins in the mail room, which is staffed with many employees who have the responsi- bility of receiving and opening both routine mail (cata- logs, advertisements) and mail containing customer payments. Each mail clerk opens the envelope and sepa- rates the check and remittance advice. The clerk recon- ciles the two and then manually adds each receipt to a common remittance list. When all customer payments have been so processed, the finished remittance lists and the associated checks are sent to the cash receipts department. The remittance advices are sent to the AR department.

The cash receipts clerk receives the checks and the remittance list, which he reconciles. At that time he en- dorses each check “For Deposit Only” and manually re- cords it in the hard-copy cash receipts journal. He then sends the signed checks and remittance list to the AR department. At the end of day the clerk manually pre- pares a journal voucher summarizing the cash receipts and sends it to the general ledger department.

The AR clerk receives the remittance advices, the checks, and the remittance list. He reconciles them and manually posts the amounts received to the customer accounts in the hard-copy AR subsidiary ledger. The clerk files the remittance advices and the remittance list in the department. He next prepares a deposit slip and sends it, along with the checks, to the bank. Finally, the clerk manually prepares a hard-copy account summary, which he sends to the general ledger department.

The general ledger department receives the account summary and the journal voucher from the AR depart- ment and cash receipts, respectively. The clerk reviews the two documents and updates the control accounts in

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the digital general ledger via the department personal computer. Finally, the clerk files the account summary and journal voucher in the department.

##### *Required:*

1. Create a data flow diagram of the current system.
2. Create a system flowchart of the existing system.
3. Analyze the internal control weaknesses in the sys- tem. Model your response according to the six cat- egories of physical control activities specified in COSO.
4. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses you identified.

## A&V Safety, Inc. (Manual and Stand Alone Computer Processing)

### *(Prepared by Adam Johnson and Aneesh Varma,* Lehigh University)

A&V Safety, Inc., is a growing company specializing in

the sales of safety equipment to commercial entities. It currently employs 200 full-time employees, all of whom work out of its headquarters in San Diego, California. During the summer, the company expands to include about ten summer interns who are delegated smaller jobs and other errands. A&V currently competes with Office Safety, Inc., and X-Safe, who lead the industry. Suppliers for A&V include Halotron Extinguishers, Kadelite, and Exit Signs, Inc. A&V attempts to maintain inventory levels sufficient to service two weeks of sales. This level has shown to avoid stock-outs, and the excess inventory is held in a warehouse in a suburb of San Diego.

A&V has a legacy accounting system that employs a combination of manual procedures supported by standalone PCs in the various departments. Recently it has experienced business inefficiencies that have been linked to their antiquated accounting system. You have been retained by A&V management to review its proce- dures for compliance with the Sarbanes-Oxley Act and to provide recommendations for improvement. The A&V expenditure cycle is presented in the following paragraphs.

### *Revenue Cycle*

A&V Safety, Inc., has one sales department at its head- quarters in San Diego. Sales representatives visit current and potential clients in sales districts and all customer orders go through a sales representative. The orders are faxed, mailed, or delivered in person to the sales depart- ment by the representative at the end of each day.

In the sales department a sales clerk receives the orders and manually prepares a three-part hard-copy

sales order. The clerk sends one sales order copy to the billing department, the stock release copy to the ware- house, and the packing slip copy to the shipping depart- ment. The original customer order is filed in the sales department.

Upon receipt of the sales order, the billing clerk records the sale in the digital sales journal using the de- partment PC. The clerk then prints a hard-copy invoice, which is sent to the customer. Next, the clerk sends the sales order to the AR department for further processing. At the end of the day, the clerk prints a hard-copy sales journal voucher from the PC and sends it to the general ledger.

The warehousing clerk uses the stock release copy to pick the goods from the shelves and then updates the digital inventory subsidiary ledger using the warehouse PC. Next, the clerk sends the good and the stock release to the shipping department. At the end of the business day, the clerk prints an inventory summary from the PC and sends it to the general ledger department.

The shipping clerk reconciles the packing slip sent from the sales department with the stock release and goods received from the warehouse. If all is correct, the clerk manually prepares a hard copy bill of lading. He then attaches the packing slip and bill of lading to the goods, which go to the carrier for delivery to the cus- tomer. Finally, the clerk files the stock release in the department.

The accounts payable clerk receives the sales order from the billing department and uses it to update the digital AR subledger from the department PC. The sales order is then filed in the department. At the end of the day the clerk prints an AR summary from the PC and sends it to the general ledger department.

Customer payments come into the mail room where mail clerks open the envelopes and send the checks and remittance advices to the accounts payable department. The AR clerk reconciles the remittance advice with the check and updates the customer’s account in the digital AR subsidiary ledger. The clerk then files the remittance advices in the department and sends the checks to the cash receipts department. As previously mentioned, at the end of the day, the AR clerk prints a hard-copy AR summary from the depart- ment personal computer and sends it to the general ledger department.

The cash receipt clerk receives the checks and re- cords the payments in the digital cash receipts journal. The clerk then manually prepares a hard-copy deposit slip and sends the checks and deposit slip to the bank. At the end of the day, the clerk prints a cash receipt journal voucher from the department PC and sends it to the general ledger department.

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The general ledger clerk receives the sales journal voucher, cash receipts journal voucher, the AR sum- mary, and the inventory summary. The clerk reconciles these documents and posts to the appropriate control accounts in the digital general ledger from the depart- ment PC. Finally, the general ledger clerk files the sum- maries and journal vouchers in the department.

##### *Required:*

1. Create a data flow diagram of the current system.
2. Create a system flowchart of the existing system.
3. Identify the internal control weaknesses in the sys- tem. Model your response according to the six cat- egories of physical control activities specified in COSO.
4. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses you identified.

## Premier Sports Memorabilia (Networks Computer System with Manual Procedures)

### *(Prepared by Chris Polchinski, Lehigh University)*

Premier Sports Memorabilia is a medium-sized, rapidly growing online and catalogue-based retailer centered in Brooklyn, New York. The company was founded in 1990 and specializes in providing its customers with au- thentic yet affordable sports memorabilia from their fa- vorite players and teams, past and present. Traditionally, the company’s customers were located in the northeast region of the United States. Recently, however, Premier launched a successful an ad campaign to expand its cus- tomer base. This has increased sales, which has in turn placed a strain on the organization’s operational re- sources. The company currently employs 205 employees, who are spread out among its three warehouses and two offices in the tri-state area.

The firm purchases from large number of manufac- turers and memorabilia dealers around the country and is always looking for additional contacts that have new or rare items to offer.

The company has a computer network installed, which, until recently, has served it well. The firm is now, however, experiencing operational inefficiencies and accounting errors. Your firm has been hired to eval- uate Premier’s business processes and internal controls. The revenue cycle is described in the following paragraphs.

### *Revenue Cycle Procedures*

Premier’s revenue process is initiated when a customer places an order either online, by mail, or through a tele- phone representative. The order is then manually en- tered into the computer system for mail or telephone orders, while online orders are automatically entered

upon arrival. When the customer order is entered, the system automatically performs an online credit check. If credit is approved, the sales process continues. If credit is denied, the process ends and the customer is notified of the automatic rejection.

For approved order, the clerk manually prepares four hard copies of each sales order. One copy is entered into the terminal in the sales department and filed. The approved sale is automatically posted to the digital sales journal. A second copy is sent to the billing department, where it is further processed. A third copy is sent to the warehouse. A final copy is sent to the customer as a receipt stating that the order has been received and processed.

At the warehouse, the sales order is used as a stock release, authorizing a warehouse clerk to physically pick the requested items from the shelves. The clerk then manually prepares a bill of lading and packing slip, which accompany the goods to the carrier. The ware- house clerk then accesses the computer terminal and creates a digital shipping notice for the billing depart- ment. Finally, the clerk files the stock release hard copy in the warehouse.

From a terminal, the billing department clerk re- conciles the hard-copy sales order and the digital ship- ping notice and prints two hard copies of an invoice. One copy is sent to the customer as a bill and the other is sent to the AR department. The clerk then files the sales order copy in the department.

Upon receipt of the hard-copy invoice, the AR clerk creates a digital record in the AR subsidiary ledger from his terminal. The clerk then files the invoice copy in the department.

Customer payments and remittance advices come into the mailroom. The clerk separates the documents and sends the remittance advice to AR and the checks to the cash receipts department.

Upon receipt of the remittance advice, the AR clerk accesses the customer’s account in the AR subsidiary led- ger from a terminal and adjusts the balance accordingly. The clerk files the remittance advices in the department. The cash receipts clerk receives the checks and posts them to the cash receipts journal from her termi- nal. The clerk then manually prepares a hard-copy de-

posit slip and sends it with the cash to the bank.

Finally, at the end of each day, the system prepares batch totals of all sales and cash receipts transactions and posts them automatically to the control accounts in the digital general ledger.

##### *Required:*

* + - 1. Create a data flow diagram of the current system.
      2. Create a system flowchart of the existing system.
      3. Analyze the internal control weaknesses in the system. Model your response according to the six

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categories of physical control activities specified in COSO.

* + - 1. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses you identified.

## Bait ’n Reel Superstore (Combination of Networked Computers and Manual System)

### *(Prepared by Matt Wisser, Lehigh University)*

Bait ’n Reel was established in 1983 by Jamie Roberts, an avid fisherman and environmentalist. Growing up in Pennsylvania’s Pocono Mountains region, Roberts was lucky enough to have a large lake right down the road, where he found himself fishing throughout the year. Un- fortunately, he had to drive more than 15 miles to pur- chase his fishing supplies, such as lines, hooks, and bait. Throughout his early adulthood, Roberts frequently over- heard other fishermen expressing their displeasure at not having a local fishing store to serve their needs. Roberts vowed to himself that he would open his own store if he could ever save up enough money.

By 1983, he had sufficient funds and the opportu- nity arose when a local grocery store went up for sale. He bought the building and converted it into the “Bait ’n Reel” fishing store. His early business involved cash-only transactions with local fishermen. By the mid-1990s, however, the building had expanded into a superstore that sold a wide range of sporting products and camping gear. People from all over the county shopped at Bait ’n Reel as Roberts increased his advertising efforts, empha- sizing his ability to provide excellent service and a wide range of products. Roberts moved away from a cash- only business and began offering store credit cards to consumers. He also became a regional wholesaler to many smaller sporting goods stores.

With the help of a friend, Roberts installed a com- puter network. Although these computers helped auto- mate the company’s business processes and facilitated the sharing of data between departments, much interde- partmental communication continued to be via hard- copy documents.

Revenue increased sharply during the four years af- ter the implementation of the computer system. In spite of this, Roberts had some questions about the quality of processes, as many of the subsidiary accounts did not match the general ledger control accounts. This didn’t prove to be a material problem, however, until recently, when the computers began listing supplies on hand that were not actually on the shelves. This created problems as customers became frustrated by stock-outs. Roberts knew something was wrong, but he couldn’t put his fin- ger on it.

You have been hired by Roberts to evaluate Bait ’n Reel’s processes and internal controls and make

recommendations for improvement. Bait ’n Reel’s reve- nue cycle relating to the credit based wholesale portion of the business is described in the following paragraphs.

### *Revenue Cycle*

*Sales Order Processing Procedures*

Wholesale customer orders are mailed or faxed to the sales department. When the order is received, the sales clerk checks the customer’s creditworthiness from a computer terminal. After the customer’s credit is veri- fied, the clerk keys in the sales orders into his computer terminal. A digital copy of the order is distributed to the warehouse and the shipping department terminals for further processing. The computer system automatically records the sale in the sales journal. Finally, the clerk files the hard copy of the customer order in the sales department.

Prompted by receipt of the digital sales order, the warehouse manager prints out two copies of it: the stock release and a shipping notice. Using the stock release copy, the warehouse clerk picks the selected goods from the shelves. The goods, accompanied by both documents, are sent to the shipping department. The manager then updates the inventory subsidiary ledger and the general ledger his computer terminal.

Once the shipping clerk receives the goods, the stock release, and the shipping notice, he matches them to the corresponding digital sales order from his termi- nal. Assuming everything matches, he prints out three hard copies of the bill of lading and a packing slip. Two of the bill of lading copies and the packing slip are sent, along with the goods, to the carrier. The stock release copy and the shipping notice are sent to the AR department. The third bill of lading copy is filed in the shipping department.

When the AR clerk receives the stock release and shipping notice, he manually creates a hard-copy in- voice, which is immediately mailed to the customer. Af- ter mailing the invoice, the clerk goes to his terminal and updates the AR subsidiary ledger and general ledger from the information on the stock release. After the re- cords are updated, the clerk files the stock release and shipping notice in the AR department.

### *Cash Receipts Procedures*

Customer payments come directly to the general mail- room along with other mail items. The mail clerk sorts through the mail, opens the customer payment envelope, removes the customer’s check and remittance advice, and reconciles the two documents. To control the checks and remittance advices, the clerk manually prepares two hard copies of a remittance list. He sends one copy to the AR department along with the corresponding remit- tance advices. The other copy of the remittance list ac- companies the checks to the cash receipts department.

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Once the checks and remittance list arrive in the cash receipts department, the treasurer reconciles the docu- ments, signs the check, and manually prepares three hard copies of the deposit slip. He then updates the cash receipts journal and the general ledger on his computer terminal. Next, the treasurer sends checks and two copies of the deposit slip to the bank. Finally, he files the third copy of the deposit slip and the remittance in the department.

When the AR clerk receives the remittance list and remittance advices from the mail room, he reconciles the two documents. Then, from his terminal, he up- dates the AR subsidiary ledger and the general ledger. Finally, the two documents are filed in the department.

##### *Required:*

1. Create a data flow diagram of the current system.
2. Create a system flowchart of the existing system.
3. Analyze the internal control weaknesses in the sys- tem. Model your response according to the six cate- gories of physical control activities specified in COSO.
4. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses you identified.

## Green Mountain Coffee Roasters, Inc. (Manual Procedures and Stand-alone PCs)

### *(Prepared by Ronica Sharma, Lehigh University)*

Green Mountain Coffee Roasters, Inc., was founded in 1981 as a small café in Waitsfield, Vermont, roasting and serving premium coffee on the premises. Green Mountain blends and distributes coffee to a variety of cus- tomers, including cafés, delis, and restaurants, and cur- rently has about 6,700 customer accounts reaching states across the nation. As the company has grown, several bev- erages have been added to its product line, including sig- nature blends, light and heavy roasts, decaffeinated coffee and teas, and herbal teas. Green Mountain Coffee Roasters, Inc., has been publicly traded since 1993.

Green Mountain Coffee has a warehouse and manufacturing plant located in Wilton, Vermont, where it presently employees 250 full-time and part- time workers. The company receives its beans in bulk from a select group of distributors located across the world, with their largest supplier being Columbia Beans Co. Green Mountain Coffee also sells accessories that complement its products, including mugs, thermoses, and coffee containers that it purchases from its supplier, Coffee Lovers, Inc. In addition, Green Mountain pur- chases paper products such as coffee bags, coffee cups, and stirrers, which it distributes to their customers.

Green Mountain’s accounting system consists of manual procedures supported by standalone PCs located

in various departments. Because these computers are not networked, they cannot share data digitally, and all in- terdepartmental communication is through hard-copy documents.

Green Mountain is a new audit client for your CPA firm. As manager on the assignment, you are examining its internal controls. The revenue cycle is described in the following paragraphs.

### *Sales Order System*

The sales process begins when a customer sends a cus- tomer order to the sales clerk, who does a credit check by manually reviewing the hard-copy customer sales history records. From the approved customer order, the sales clerk then manually prepares several hard copies of a sales order, including a customer copy, a stock release, two file copies, a packing slip, an invoice, and a ledger copy. The invoice, ledger copy, and a file copy are sent to the billing depart- ment. The second file copy and the stock release are sent to Sara in the warehouse. The packing slip is sent to the ship- ping department. The clerk files the approved customer order in the department.

The billing department clerk reviews the source documents that she received from sales and adds prices to the invoice. Using the department PC, the clerk then enters the billing information into the computer to re- cord the sale in the sales journal. The invoice is mailed to the customer, the ledger copy is sent to the AR clerk in the accounting department, and the file copy is filed in the billing department. At the end of day, a journal voucher is printed from the PC and sent to Vic, the gen- eral ledger clerk.

Sara in the warehouse uses the stock release and file copies to pick the goods from the shelf. She files the file copy in the warehouse. Guided by the information on the stock release copy, she then updates the digital inventory subsidiary ledger from the warehouse personal computer. Next, she sends the stock release copy, along with the goods, to the shipping department. At the end of the day, Sara prepares a journal voucher from the PC and sends it to the general ledger clerk.

The shipping clerk reconciles the stock release copy with the packing slip from sales. He then manually pre- pares a hard-copy bill of lading and records the shipment into the hard-copy shipping log. The bill of lading, pack- ing slip, and goods are sent to the carrier and the stock release copy is filed in the shipping department.

In the accounting department, relevant information taken from the ledger copy (sent from billing) is entered into the computer to update the AR records. A summary (end of day) is sent to Vic. The ledger copy is then filed in the accounting department. Vic reconciles the AR summary with the journal vouchers and then updates the digital general ledger prom the department PC. All documents are then filed.

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### *Cash Receipts System*

The mailroom clerk receives the checks and remittance ad- vices from the customer. He reconciles the checks with the remittance advices and prepares two copies of a remittance list. The checks and a remittance list are then sent to John, in the AR department. John uses a PC to process the cash receipts, update the cash receipts journal, and prepare a journal voucher and three deposit slips. The journal voucher is sent to Vic, the general ledger clerk. The checks and two deposit slips are sent to the bank to be deposited into Green Mountain Coffee’s account. The third deposit slip and the remittance list are filed. The second remittance list and the remittance advices are sent to Mary, another AR clerk, who, using the same PC, updates the AR subsidiary ledger and prepares an account summary, which is sent to

**ACL Assignments**

#### The **AR** and **Customer** files used for the fol- lowing assignments are located in the

*sampleproject.acl* that accompanies ACL. The AR file is actually an invoice file that contains several re- lated records as designated by the Trans Type field:

IN = Sales invoice

PM = Payment from customer CN = Credit note (credit memo) TR = Transfer (write-off)

Sales invoices should be represented by pos- itive Trans Amount values, while the other trans- action types are negative.

Some of the following assignments employ the ACL’s *Relation* and *Join* features. For detailed information on the use of these and other com- mands, consult ACL’s online Help feature.

1. Open the **AR** file, *Profile* the data, and *Stratify* on the Trans Amount field. Print the Last Results window and write an analysis providing possible explanations for the results obtained.
2. Open the **AR** file, stratify the file on the Trans Amount field, and use the expression builder to create filters that limit the strata to
   1. sales invoice transactions only.
   2. credit note (memo) transactions only.
   3. payment transactions only.
   4. transfer (write-off) transactions.
3. Open the **AR** file and use the expression builder to create a filter that screens for invalid transaction types. Print the results and comment.

Vic. The remittance list and the remittance advice are then filed. Vic uses the journal voucher and the account sum- mary to update the general ledger. These two documents are then filed.

##### *Required:*

* + - 1. Create a data flow diagram of the current system.
      2. Create a system flowchart of the existing system.
      3. Analyze the internal control weaknesses in the sys- tem. Model your response according to the six cat- egories of physical control activities specified in COSO.
      4. Prepare a system flowchart of a redesigned computer- based system that resolves the control weaknesses you identified.

#### Using the *Relation* feature, create a view from data in both the **AR** and **Customer** files that shows customer details (**name** and **street ad- dress**) for payment transactions with abnor- mal (positive) amount values. Print the view and comment on the results.

1. Using the *Join* feature create a view from data in both the **AR** and **Customer** files that show customer details (**name** and **address**) for pay- ment transactions with abnormal (positive) amount values. Print the view and comment on the results.
2. The following Assignments are located in the **ACL Tutorial** folder in the Student Resources section of this textbook’s Web site.
3. Tutorial 2 relates to the following commands: TOTAL, PROFILE, STATISTICS, SAMPLE, SEQUENCE, SORT, DUPLICATES, GAPS.
4. Tutorial 5 relates to the following commands: AGE, JOIN, MERGE.
5. Tutorial 6 relates to the following commands: TOTAL, COUNT, EXTRACT, EXPORT, SORT, INDEX.
6. Bradmark Comprehensive Case

##### *Required:*

Access the Bradmark ACL Case in the Student Resource section of textbook’s Web site. Your instructor will tell you which questions to answer.