Answers to Problems and Exercises

1. Students can draw their data flow diagrams in several ways, depending on the level of detail they choose to capture. Students should realize that there is not one “right” data flow diagram for this or most other business processes. Relevant data flows include payment information, receipt, goods sold information, and inventory information. Three data stores are a goods sold file, an inventory file, and daily sales total file. Processes include update goods sold file, update inventory file, update daily sales total file, and produce management reports. Sources/sinks include customer and store manager. A sample context diagram and level-0 data flow diagram are provided below. In the level-0 data flow diagram, Transform Customer Purchase, Update Goods Sold File, Update Inventory File, and Update Sales Total File, were selected as processes rather than as sources/sinks because they were deemed to be central to the point of sale process. Point out why these DFDs are balanced.

Retail Store

Context Diagram

0

Point of Sale

System

Receipt

Management

Report

Customer

Store

Manager

Payment

## Retail Store

## Level-0 Diagram

Receipt

1

Transform

Customer

Purchase

Customer

Payment

Inventory

Data

Sales Data

Goods Sold

4

Update

Sales Total

File

2

Update Goods Sold

File

3

Update

Inventory

File

Formatted

Inventory

Amount

Formatted

Sales Total

Amount

Formatted

Goods Sold

Amount

D1

Goods Sold File

D2

Inventory File

D3

Sales Total File

Sales Totals

Inventory

Amounts

Management

Report

Store

Manager

5

Produce

Management

Reports

Goods Sold

Amounts

2. Sample context and level-0 data flow diagrams are provided below. As with the previous question, students can draw their data flow diagrams in several ways, depending on the level of detail they choose to capture. Students should realize that there is not necessarily one “right” data flow diagram for this or most other business processes. It is important that the diagrams be balanced, have a clear and purposeful boundary, and obey the rules for drawing DFDs.

## Cap and Gown

## Context Diagram

Cap and Gown

Information

Order

Information

0

Order

Entry

System

Student

Shipping

Receipt

Cap and Gown

Level-0 Diagram

Cap and Gown

Information

Order

Information

Shipping

Receipt

Student

Inventory

Status

Inventory

Data

Valid Order

Information

3

Update

Inventory

File

1

Validate

Order

2

Finalize

Order

Formatted

Inventory Data

D1

Inventory File

11. A suggested answer is provided below.

Hospital Pharmacy

Context Diagram

Prescription

0

Hospital

Pharmacy

System

Doctor

Drug Label Info

Unfilled Order Info

Store

Manager

Patient Number

and Drug Type,

Amount & Cost

Unfilled Order Info

Response

Hospital Pharmacy

Level-0 Diagram

Patient Info

Order Fill Info

Billing

Dept

Nurses

Station

4

Generate

Label

3

Fill

Order

Unfilled Order Info

Response

Unfilled Order Info

Prescription

Pharmacy

Tech Review

2

Review

Prescription Order by Station

Doctor

1

Review &

Send Prescription to Station

Prescription

Prescription

D1

Patient File

Order Info

Drug Label Info

Patient Number

and Drug Type,

Amount & Cost

Drug Label Info

12. A suggested answer is provided below.

Contracting System

Context Diagram

0

Contracting

System

Shipping Bill

Purchase Order

Government

Agency

Government

Agency

Invoice

Invalid Purchase Order Info

Contracting System

Level-0 Diagram

Validated PO

Validated PO

Purchase Order

1

Verify

Purchase

Order

Government

Agency

D1

Contract Database

Validated PO #

Contract Terms and Conditions

Invalid Purchase Order Info

Completed PO

Closeout Info

Shipping Bill

Invoice

2

Check

Inventory

Not-in-stock

Report

3

Pull & Ship

Items from

Inventory

Validated PO,

Initial Shipping Bill

& Exception Report

D2

Contracts File

Shipping Bill for

Exception Report Items