DFD Examples

Creating Data Flow Diagrams

Steps:

1. Create a list of activities
2. Construct Context Level DFD
   (identifies external entities and processes)
3. Construct Level 0 DFD
   (identifies manageable sub process)
4. Construct Level 1- n DFD
   (identifies actual data flows and data stores)
5. Check against rules of DFD

DFD Naming Guidelines

- External Entity → Noun
- Data Flow → Names of data
- Process → verb phrase
  - a system name
  - a subsystem name
- Data Store → Noun

Creating Data Flow Diagrams

Lemonade Stand Example

Creating Data Flow Diagrams

Example

The operations of a simple lemonade stand will be used to demonstrate the creation of dataflow diagrams.

Steps:

1. Create a list of activities
2. Construct Context Level DFD
   (identifies sources and sink)
3. Construct Level 0 DFD
   (identifies manageable sub processes)
4. Construct Level 1- n DFD
   (identifies actual data flows and data stores)

Creating Data Flow Diagrams

Example

Think through the activities that take place at a lemonade stand.

1. Create a list of activities

Customer Order
Serve Product
Collect Payment
Produce Product
Store Product

Creating Data Flow Diagrams

Example

Also think of the additional activities needed to support the basic activities.

1. Create a list of activities

Customer Order
Serve Product
Collect Payment
Produce Product
Store Product
Order Raw Materials
Pay for Raw Materials
Pay for Labor

Creating Data Flow Diagrams

Example

Group these activities in some logical fashion, possibly functional areas.

1. Create a list of activities

Customer Order
Serve Product
Collect Payment

Produce Product
Store Product

Order Raw Materials
Pay for Raw Materials

Pay for Labor

Creating Data Flow Diagrams

Example

Create a context level diagram identifying the sources and sinks (users).

Customer Order
Serve Product
Collect Payment

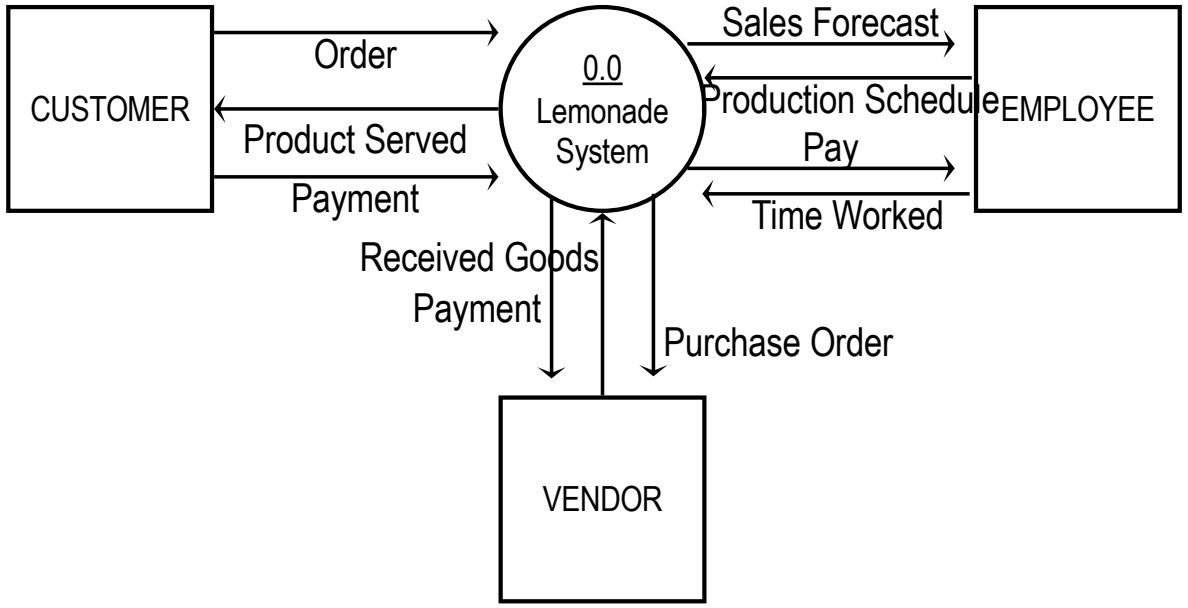
Produce Product
Store Product

Order Raw Materials
Pay for Raw Materials

Pay for Labor

2. Construct Context Level DFD (identifies sources and sink)

Context Level DFD



Creating Data Flow Diagrams

Example

Create a level 0 diagram identifying the logical subsystems that may exist.

Customer Order
Serve Product
Collect Payment

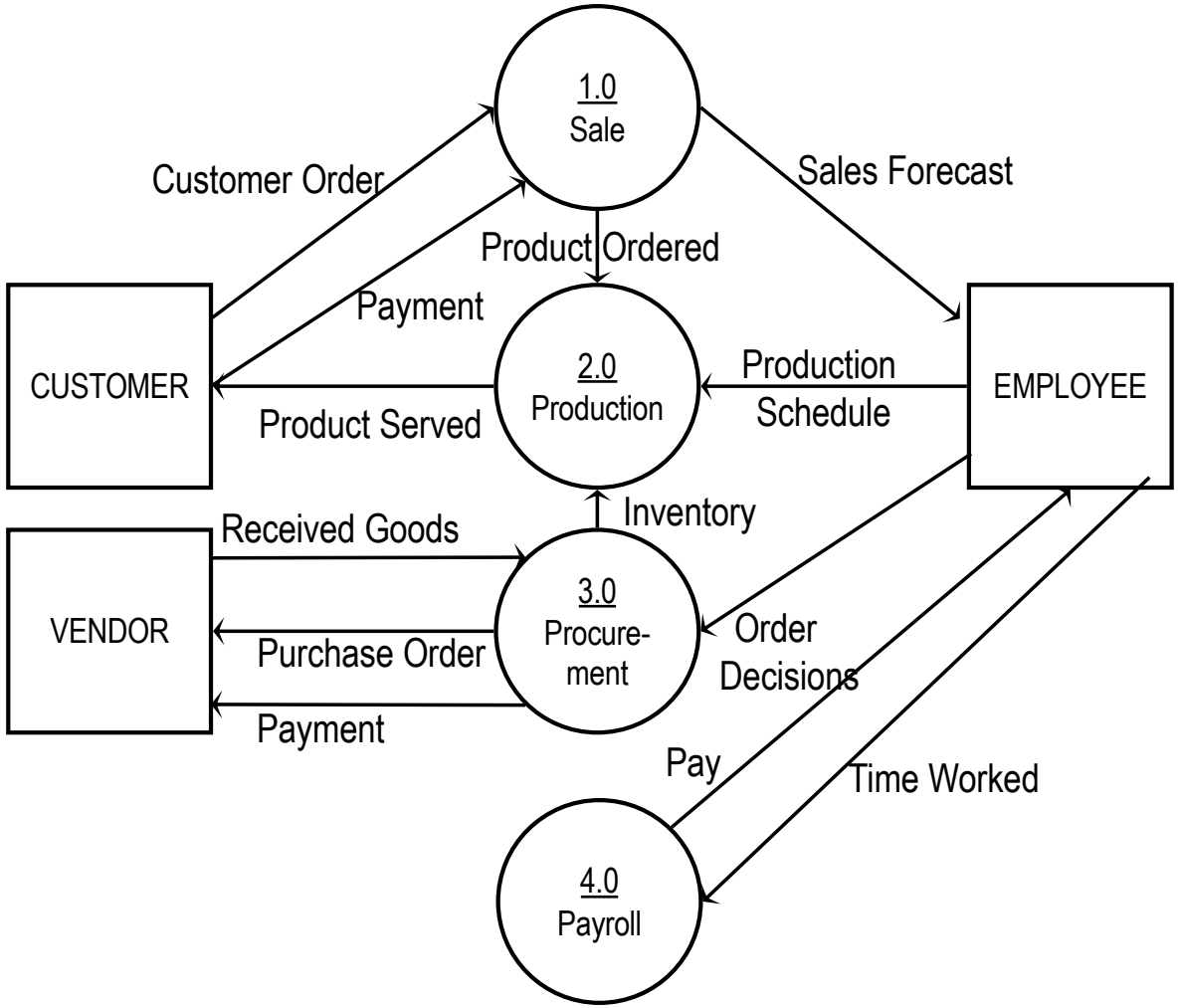
Produce Product
Store Product

Order Raw Materials
Pay for Raw Materials

Pay for Labor

3. Construct Level 0 DFD
(identifies manageable sub processes)

Level 0 DFD



Creating Data Flow Diagrams

Example

Create a level 1 decomposing the processes in level 0 and identifying data stores.

Customer Order
Serve Product
Collect Payment

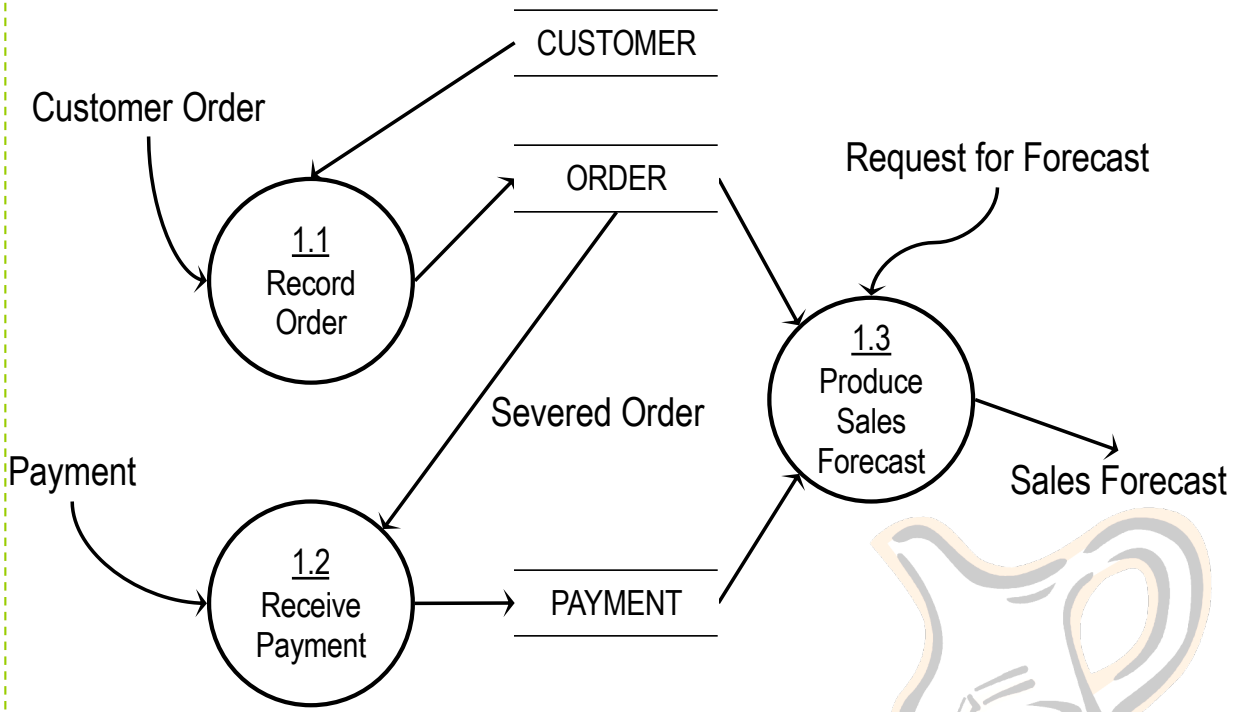
Produce Product
Store Product

Order Raw Materials
Pay for Raw Materials

Pay for Labor

4. Construct Level 1- n DFD
(identifies actual data flows and data stores)

Level 1 DFD



Creating Data Flow Diagrams

Example

Create a level 1 decomposing the processes in level 0 and identifying data stores.

Customer Order
Serve Product
Collect Payment

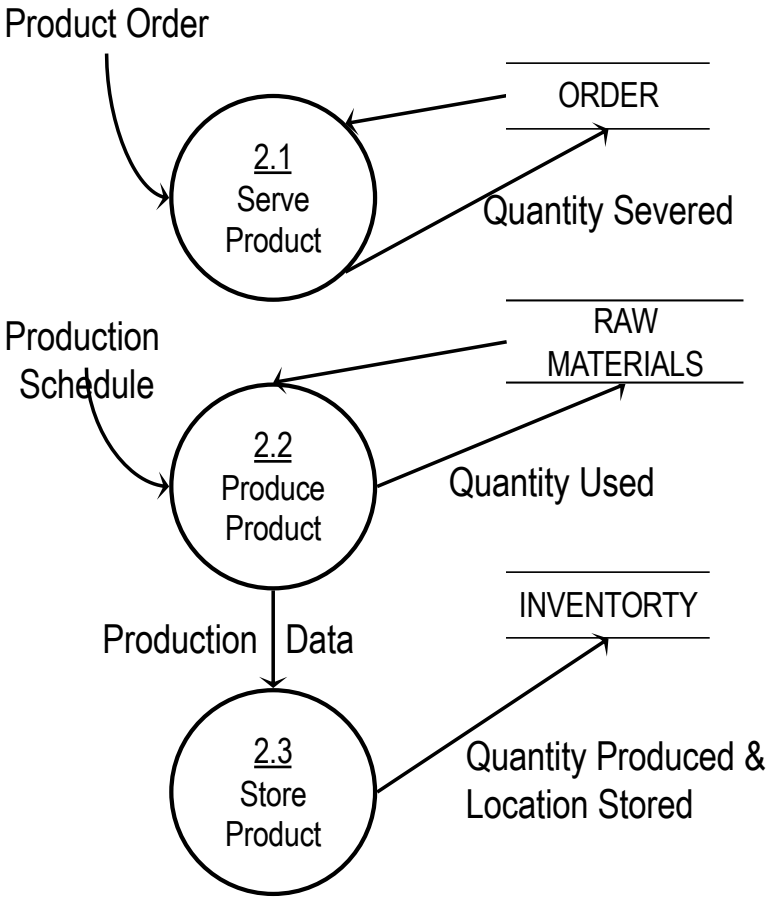
Produce Product
Store Product

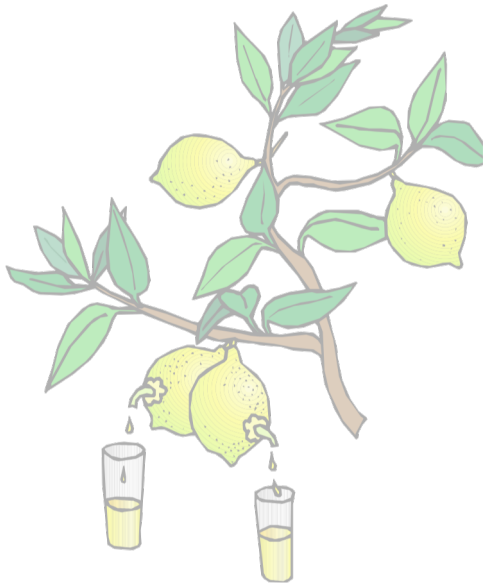
Order Raw Materials
Pay for Raw Materials

Pay for Labor

4. Construct Level 1 (continued)

Level 1 DFD





Creating Data Flow Diagrams

Example

Create a level 1 decomposing the processes in level 0 and identifying data stores.

Customer Order
Serve Product
Collect Payment

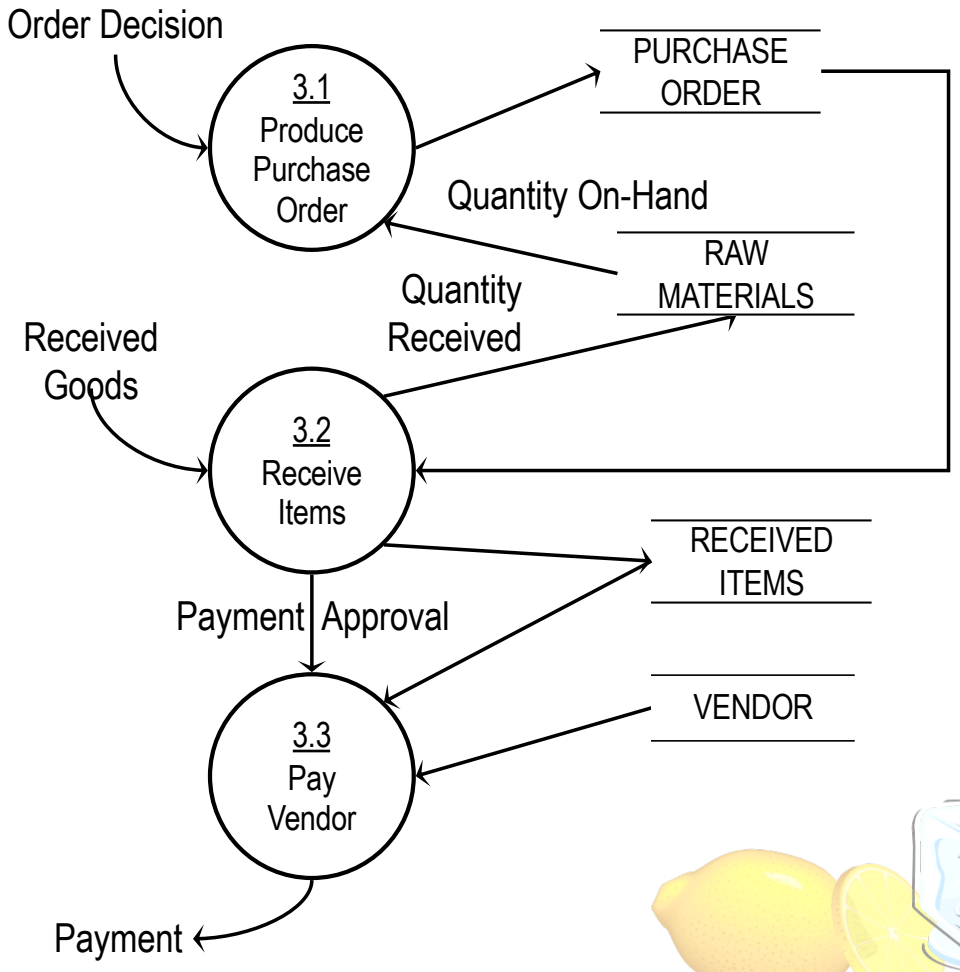
Produce Product
Store Product

Order Raw Materials
Pay for Raw Materials

Pay for Labor

4. Construct Level 1 (continued)

Level 1 DFD



Creating Data Flow Diagrams

Example

Create a level 1 decomposing the processes in level 0 and identifying data stores.

Customer Order
Serve Product
Collect Payment

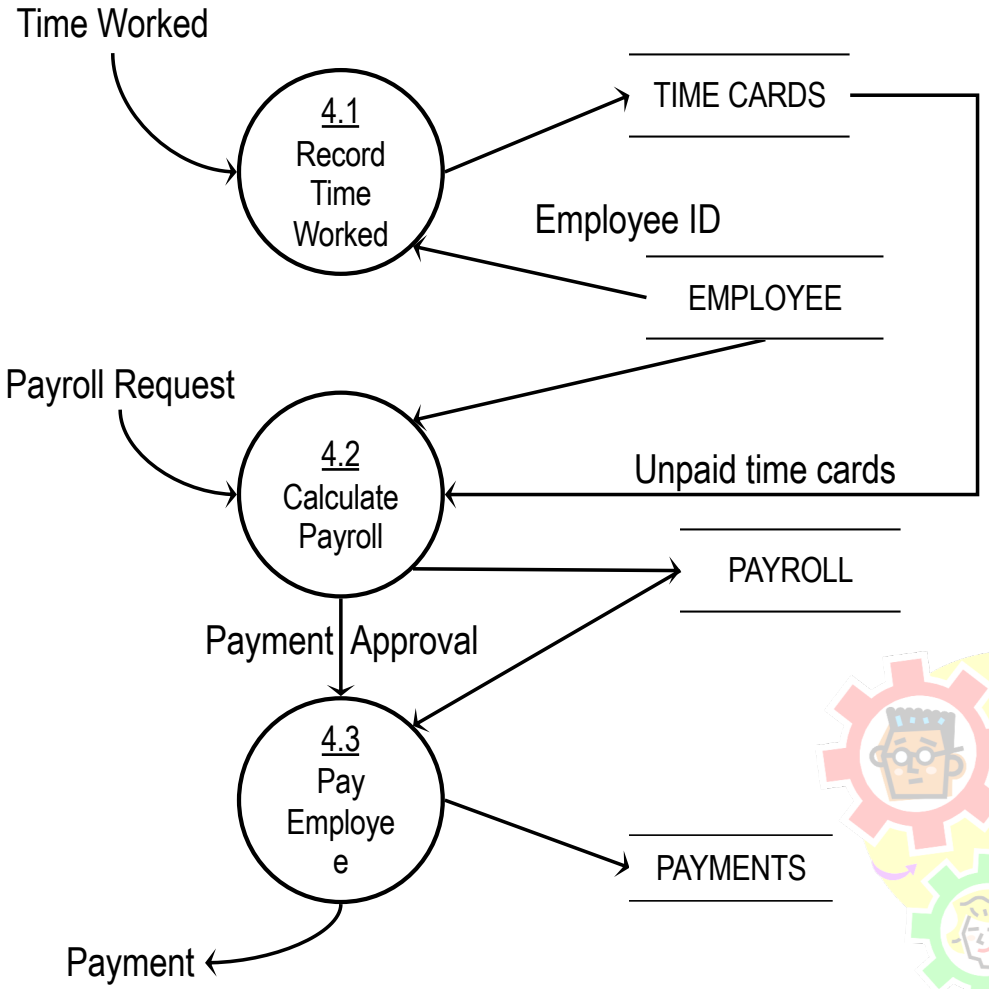
Produce Product
Store Product

Order Raw Materials
Pay for Raw Materials

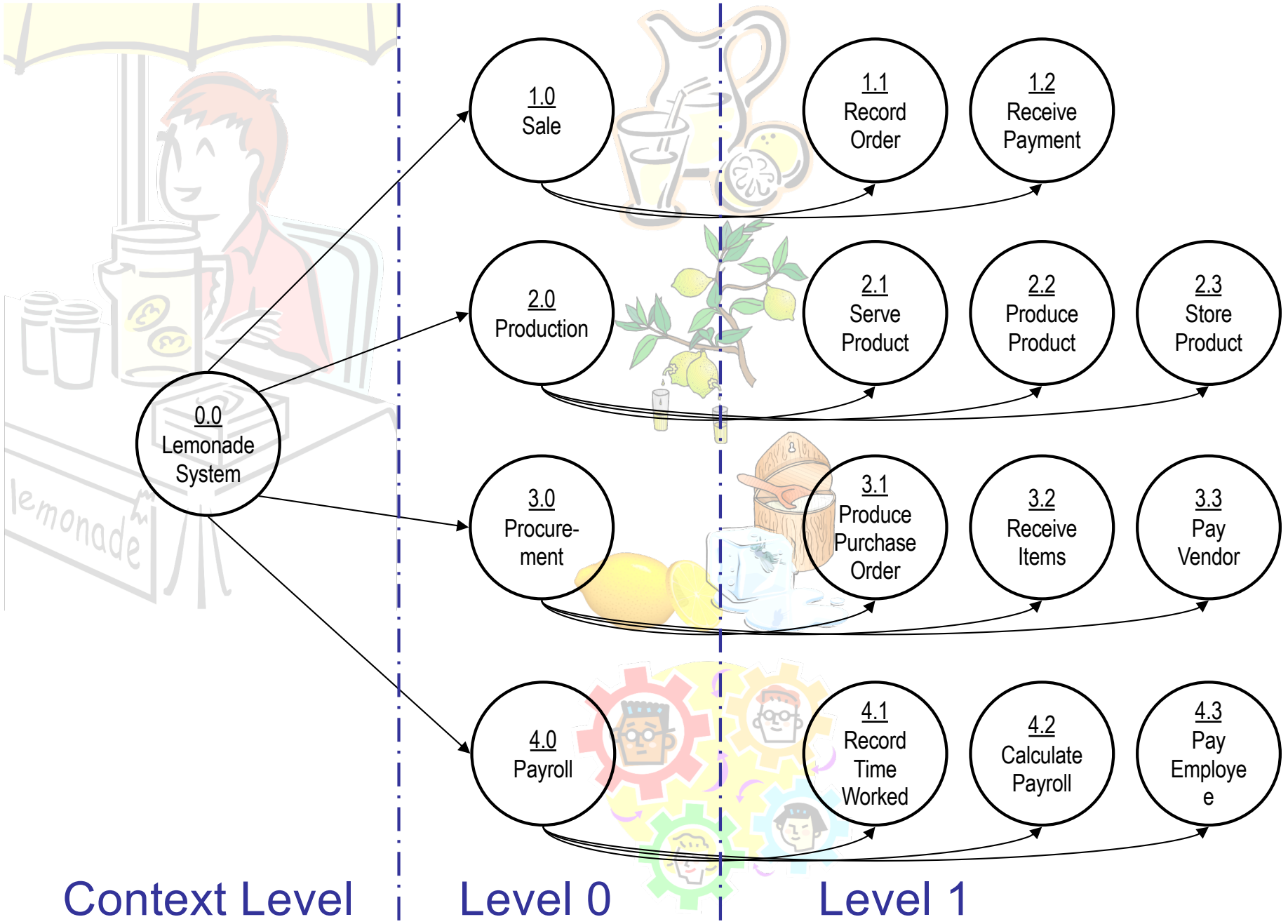
Pay for Labor

4. Construct Level 1 (continued)

Level 1 DFD



Process Decomposition



DFD Example: Bus Garage Repairs

- Buses come to a garage for repairs.
- A mechanic and helper perform the repair, record the reason for the repair and record the total cost of all parts used on a Shop Repair Order.
- Information on labor, parts and repair outcome is used for billing by the Accounting Department, parts monitoring by the inventory management computer system and a performance review by the supervisor.

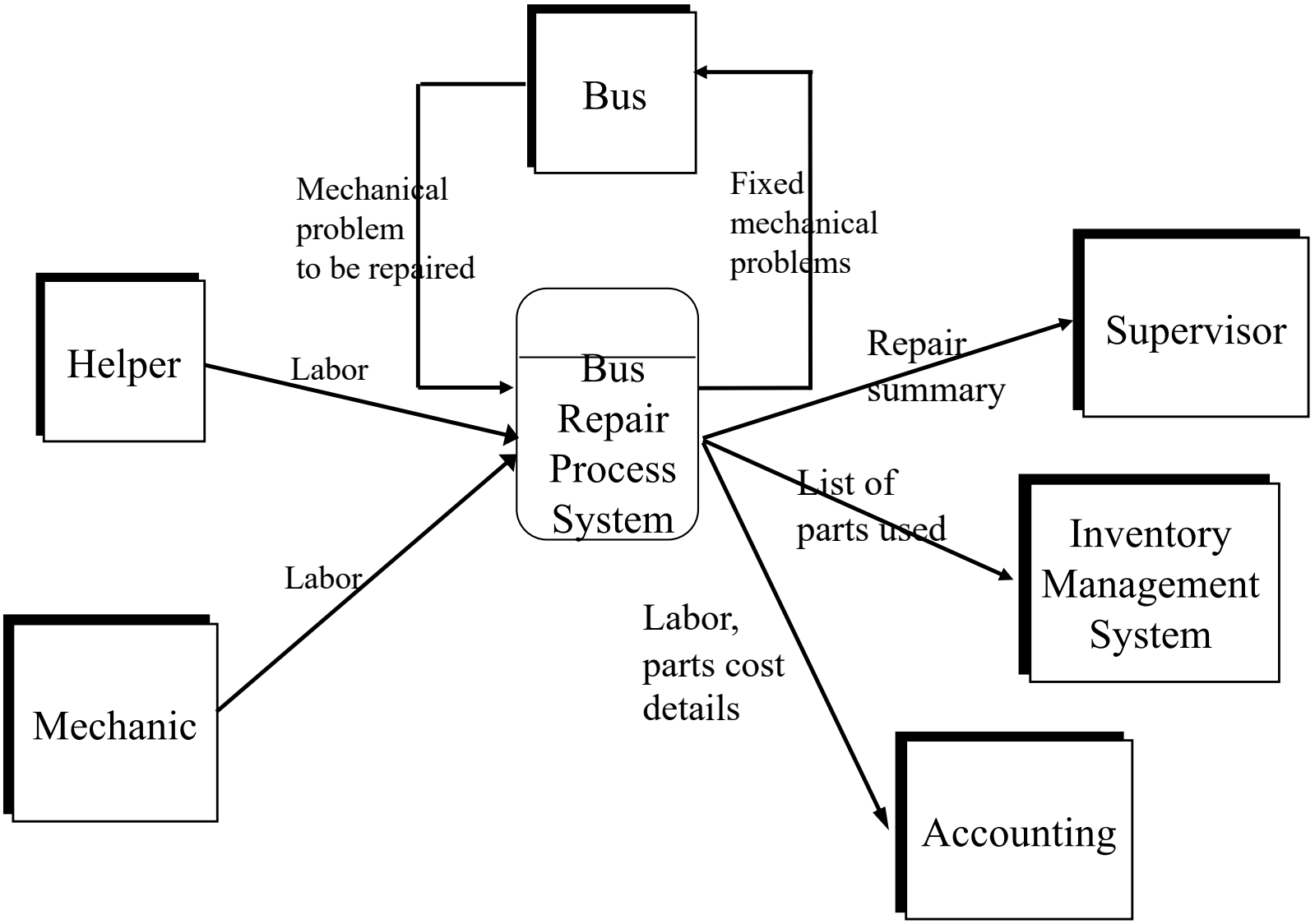
DFD Example: Bus Garage Repairs (cont'd)

- *External Entities*: Bus, Mechanic, Helper, Supervisor, Inventory Management System, Accounting Department, etc.
- *Key process* ("the system"): performing repairs and storing information related to repairs
- *Processes*:
  - Record Bus ID and reason for repair
  - Determine parts needed
  - Perform repair
  - Calculate parts extended and total cost
  - Record labor hours, cost

DFD Example: Bus Garage Repairs (cont'd)

- *Data stores*:
  - Personnel file
  - Repairs file
  - Bus master list
  - Parts list
- *Data flows*:
  - Repair order
  - Bus record
  - Parts record
  - Employee timecard
  - Invoices

Bus Garage Context Diagram



CSUB Burger's Order Processing System

- Draw the CSUB Burger's context diagram
  - System
    - Order processing system
  - External entities
    - Kitchen
    - Restaurant
    - Customer
  - Processes
    - Customer order
    - Receipt
    - Food order
    - Management report