MILESTONE 6 – PROCESS MODELING

Synopsis

Process modeling is a technique for organizing and documenting the structure and flow of data through a system's processes and/or the logic, policies, and procedures to be implemented by a system's processes. In this milestone we focus on using and constructing data flow diagrams (DFDs) and decomposition diagrams to perform process modeling.

Data flow diagrams are tools that depict the flow of data through a system and the work or processing performed by that system. A decomposition diagram is a DFD planning tool that shows the top-down functional decomposition and structure of a system.

During this milestone you will first construct a *context diagram* to establish project scope and boundaries. Secondly, you will draw an *event decomposition diagram* to partition the system into logical subsystems and/or functions. Thirdly, you will draw *event diagrams* to model individual processes. Finally you will construct a *system data flow diagram* that shows the big picture of the system, and a *primitive data flow diagram* for a single event process.

Objectives

After completing this milestone, you should be able to:

⇒ Construct a context diagram to illustrate a system's interfaces with its environment.
⇒ Identify external and temporal business events for a system.
⇒ Logically group events to create an event decomposition diagram.
⇒ Create event diagrams.
⇒ Merge event diagrams into a system data flow diagram.
⇒ Draw appropriate primitive data flow diagrams.

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Prerequisites

1. Process modeling - Chapter 9
2. Optional: Solutions for Milestone 1-5

Assignment

The preliminary investigation and problem analysis phases of the methodology have been completed and you understand the current system's strengths, weaknesses, limitations, problems, opportunities, and constraints. You have already built the data model (Milestones 4 and 5) to document business data requirements for the new system. You now need to build the corresponding process models.

Activities

1. If you have not already drawn a *Context Diagram* in Milestone 2, draw one now based on the meeting transcript in Exhibit 2.1 of Milestone 2 plus the accompanying use-case (event/response) matrix in Exhibit 6.1. Note that not everything in the transcript is related to the Context Diagram.
2. Given the accompanying use-case (event/response) matrix in Exhibit 6.1, draw the *Event Decomposition Diagram.* For background information on each use case, see the meeting transcript in Exhibit 3.1 of Milestone 3 and Exhibit 4.1 of Milestone 4.
3. Given your decomposition diagram from above and the use-case matrix, draw *Event Diagrams.* Your instructor will tell you which ones to draw. Use your data model from Milestones 3 and 4 as an attribute reference. Also, state any assumptions you make.
4. Merge your event diagrams from #3 above into a *System Diagram*.
5. For all transaction processes described in the accompanying narrative, draw the *Primitive Data Flow Diagram*.

Deliverable format and software to be used are according to your instructor's specifications. Deliverables should be neatly packaged in a binder, separated with a tab divider labeled "Milestone 6".

References:

Completed Solutions from Prior Milestones

Completed Use-Case (or Event-Response) List

Exhibit 6.1

Primitive Diagram Narrative(s)

Exhibit 6.2

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Deliverables:

Context Diagram:	**Due: __/__/__** **Time: _____**
Decomposition Diagram:	**Due: __/__/__** **Time: _____**
Event Diagrams:	**Due: __/__/__** **Time: _____**
System Diagram:	**Due: __/__/__** **Time:_____**
Primitive Diagram(s):	**Due: __/__/__** **Time: _____**

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ADVANCED OPTION

Exhibit 6.1 is a partial use-case (event/response) list. Add the following maintenance Use-Cases: Add a Site, Add a Building, Add a Room, Add a MailStop, and Add a Department. Draw the Event Decomposition Diagrams and the System Diagram based on the complete list.

Event Diagrams: **Due: __/__/__**

Time: _____

System Diagram: **Due: __/__/__**

Time: _____

Milestone's Point Value: **_____**

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Exhibit 6.1

Below is a Use-Case list for the major processes of the system. For more information on each of these use cases, see the meeting transcripts in Exhibit 3.1 of Milestone 3 and Exhibit 4.1 of Milestone 4. Other events exist for basic data maintenance (add records, delete records, etc.)

Actor(s)	Event (or Use-Case)	Trigger	Responses
Employee	Search Employee Directory	Employee selects search criteria (first or last name, department, location, job title, or supervisor)	System reports all employees that match search criteria, listing phone numbers, office location, department, job title, and supervisor.
Employee	Update Employee Profile	Employee has information to update	System updates Employee, EmergencyContact, UnitedWayContribution, and/or MiscDeduction data stores
Staffing Dept	Enter New Employee Profile	Employee begins work and submits initial forms	System adds records to Employee and related data stores
Manager	View United Way Participation	Manager requests report	System generates report.
Staffing Dept	Update Employee Secure Data	Promotion, job change, or relocation paperwork	System updates data for pay rates or job title or supervisor.
Manager	Perform Ad-hoc Query and Reporting	Manager submits SQL	SQL is run against database to generate report.
Employee Manager HR	Perform Employee Detail Lookup	User selects employee from list of employees (subject to security restrictions)	System displays option for kind of information to be displayed. If a kind of information is selected, system displays name/address, salary/wage, location, emergency contact, deduction options, etc.
Manager HR	Perform Employee Group Lookup	User selects search criteria (job code, building, department, salary/wage range, home city or phone exchange, employment status, etc.)	System displays all employees that match criteria. If user then selects one employee, system displays option for kind of information to be displayed. If a kind of information is selected, system displays name/address, salary/wage, location, emergency contact, deduction options, etc.

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Exhibit 6.2

Use the following narrative to construct the Primitive Diagram for the Search Employee Directory event.

The employee enters search criteria for first or last name, department, location, job title, or supervisor. The system displays all employees matching the criteria with links to detailed information for each employee. The user clicks on detail link for an employee. The system will display the phone number, employee's office location, department, job title, and supervisor.

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