



MILESTONE 12 - OBJECT DESIGN 1

Synopsis

In performing object-oriented analysis (Milestone 7) we identified objects and use cases based on ideal conditions and independent of any hardware or software solution. During object-oriented design we want to refine those objects and use cases to reflect the actual environment of our proposed solution.

In this milestone you will first transform the use case course of events prepared in Milestone 7 to be a design use case. Secondly, we will model the use case with an object robustness diagram. We will also construct a sequence diagram for the use case. Finally, we will transform our object class diagram from Milestone 7 into a design class diagram.

Objectives

After completing this milestone, you should be able to:

- Transform a requirements use case to a design use case.
- ⇒ Construct an object robustness diagram to model the high-level object interactions for a use
- Construct a sequence diagram to model the detailed object interactions.
- Transform an analysis class diagram into a partial design class diagram for a use case.

Prerequisites

Before starting this milestone the following topics should be covered:

- Modeling System Requirements With Use Cases Chapter 7
- Object-Oriented Analysis and Modeling Using the UML Chapter 11
- 3. Object-Oriented Design and Modeling Using the UML Chapter 18
- 4 Milestone 7 Solution

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This milestone is only feasible if combined with Milestone 7 Object Modeling.

Assignment

In this assignment we will begin with the analysis use case and class diagram from Milestone 7 and transform them into various design models to reflect the targeted production environment.

Activities

- Transform the requirements use case narrative from Milestone 3 to a design use case, using the Equipment Check-Out Narrative in Exhibit 12.1. Make assumptions where necessary.
- 2. Construct a sequence diagram for the analysis use case. Make assumptions where necessary.
- 3. Construct a partial design class diagram that reflects the Equipment Check-Out use case. Use only the objects from the class diagram from Milestone 7 that are relevant to the use case. Add control and interface objects from your design use case and dependency relationships between them and other objects as necessary. Add just those methods needed to implement the use case. Mark visibility both for methods and attributes. Make assumptions where necessary.

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 12" and accompanied with a Milestone Evaluation Sheet.

References:

Milestone 7 Solution

Provided by your instructor.

Equipment Check-Out Narrative

Exhibit 12 1

Templates

See on-line learning center website for the textbook.

Deliverables:

Design Use Case:	Due://_ Time:
Object Robustness Diagram:	Due://_ Time:
Sequence Diagram:	Due://_ Time:

Design Class Diagram:	Due://_ Time:

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Milestone's Point Value:

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Exhibit 12.1

Equipment Check-Out Business Process Narrative

A maintenance employee will use a web browser to access the Equipment Check-Out System from any computer on the network. The system will first display an HTML logon screen with an input form prompting for the employee's ID and password. When the employee clicks Submit, the system will verify that the employee is authorized to check-out equipment. If the employee is not authorized, the system will return to the logon screen with an error message.

If the employee is authorized the system will display an HTML input form that prompts for any part of the name of the piece of equipment the employee wants to check-out. The employee can enter a partial name. When the employee clicks Submit, the system will read from the Equipment and Check-Out Transaction tables to display a list of the EquipName for all pieces of equipment that match that name along with a status of whether or not it is available for check-out. The list will also be limited to just those pieces of equipment with an appropriate skill classification for that employee. That same screen will allow the employee to enter a qty to check out and an expected return date beside one or more pieces of equipment.

When the employees clicks Submit, the system will record a new Check-Out Transaction for each of the requested pieces of equipment, using the system date as the DateCheckedOut. The system will then display a check-out receipt that details the check-out and the location of the equipment so the Equipment Depot staff can pull it. The receipt screen will also include a link so the employee can return to the equipment name prompt screen to search for and check-out more equipment.

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