

Systems Development: Preliminary Design Assignment

Background

This is the first of two related assignments for the design phase of developing a student registration database. We perform a preliminary product design based on the requirements specification.

Due Date

Each group will turn in a written report of the completed assignment due before the start of class on April 30, 2007.

General Requirements

Each team should have completed a requirements specification that defines what the system is to do. We now must specify how the system will accomplish its specified functions within specified performance limits.

Develop a preliminary design specification showing the object models and sequence diagrams necessary to implement all of the system requirements. Complete a requirement to design trace matrix.

A sample design diagram is provided on the course web site. Note this document combines preliminary and detailed design. Specifically, the sections on screen and table design will be performed in the next unit.

Specific Requirements

Please make sure your group completes **all** of the assigned tasks for the entire assignment.

Schedule Work

Plan the group's tasks for the entire assignment. Determine a reasonable work schedule for completing all relevant tasks.

Develop Object Diagrams

Document each object suggested by the requirements in an object diagram. Note attributes and methods for each object. Show the association between objects with a sentence or sentence fragment. Be sure each association is identified as a "has-a" or "is-a" type.

Since this project uses an Access front end and an Oracle back end, the preliminary design must include at least two object diagrams: one for each end. However the design may require substantially more than two diagrams.

In Access possible object types are forms, macros, modules, queries, reports, or tables. In Oracle, objects are queries, tables, or views. Make sure the diagrams include a node for all of these the group plans to use. For example if the group identifies the need for three Access forms and two Oracle tables, there must be five object nodes in the diagrams.

Draw Sequence Diagrams

Construct a sequence diagram for all transactions (use cases) to be carried out by the system. The group may use either the full or the simplified UML notation. The group may use a design tool or a simple diagram tool.

The sequence diagrams must account for all requirements and use cases generated during the requirements specification and analysis phases. In some cases the ratio of sequence diagrams to use cases will be 1:1, meaning each use case has a diagram. The ratio can be denser, meaning more than one use case can be represented by the same diagram. But all requirements and use cases must be accounted for by some diagram.

Build Project Trace Matrix

In an Access table or Excel spreadsheet, define the following columns:

- Requirement ID.
- Element type: use case, Access object (specify), Oracle object (specify)
- Element name: Either the use case or object name.
- Reason: text description

In the above, specify means the specific type for Access and Oracle objects.

Populate this matrix with the names of all objects and use cases developed so far. Identify the corresponding requirement ID from the Unit 03 assignment. Fill in the type and reason as appropriate.

Upon completion of the matrix, one should be able to trace every element in the design back to a specific requirement ID. Then by examining the tables generated for Unit 03, one can get details about those requirements.

Final Report

Submit a report including the work schedule and all of the items mentioned above. Write a short (three paragraph) executive summary on the major findings from the group during this phase.