



Writing Use Cases

Course Design Document

Business Need / Course Justification

Industry research has shown conclusively that two major reasons for project failure are poorly written requirements and poorly understood requirements.

Use Cases are shown to have the benefit of being easily understood by all stakeholders. Clear understanding leads to better communication, so that requirements problems are discovered early in the project lifecycle when they are relatively easy and inexpensive to fix. Use Cases themselves address the issue of poorly understood requirements.

This course addresses the issue of poorly written requirements. The course focuses on producing high quality Use Cases for projects. Many books exist on Use Cases, but few people produce high quality Use Cases after reading a book. This course provides plenty of opportunity for writing Use Cases, which are then evaluated by the instructor. This process allows the attendee to make corrections and improve their skills under the guidance of the course instructor.

Use Cases are an industry standard way of writing functional requirements for a business process or software project. They are an industry standard because the technique works very well over a wide range of project types.

The course material presents the development of use cases from the beginning of a project up through a level of detail that is appropriate for the end of the Elaboration phase of a commercial project.

Behavioral Objectives

At the conclusion of this course, the attendee will be able to:

- Develop a complete and correct Use Case Model for a project
- Write a correct and complete Use Case, including the basic path, alternative paths, and pre and post conditions.
- Properly apply include, extend, inheritance, and subordinate Use Case relationships.
- Review Use Cases for correctness and completeness and make corrections based on the result of the reviews.
- Create a correct Use Case diagram
- Develop activity and sequence diagrams to show the dynamic behavior of the Use Case.
- Develop class and package diagrams to show the static relationships of the Use Case.
- Write Use Cases at the business and software level.

Description

This class is concerned with developing the Use Case Model for a software or business process project. The Use Case Model includes at a minimum Use Case diagrams and Use Case specifications. It may also include several UML diagrams, such as activity or sequence diagrams to model dynamic behavior, and class or package diagrams to model relationships between elements and people in the system.

The class touches only lightly on the software development process and the roles within it, just enough to give context to the development of the Use Case Model.

Scope

The course is concerned with producing Use Cases, their associated diagrams and documentation, and the correctness and quality of the Use Case Model. It does not cover the software development lifecycle or the role of the Business Analyst on the project team. Those topics are covered in the course “UML Modeling for the Business Analyst”. This is not a general technical writing course, but rather a course to learn a specific technical writing technique, producing good Use Cases for a project team.

Prerequisites

None.

Audience

- Business Analysts
- Requirements Analysts
- Requirements Writers
- Other people who will be writing Use Cases

Duration

- Corporate – 5 days
- University – 1 school term (quarter or semester)
- See instructor delivery notes for detailed timelines

Each lesson contains a lecture, lesson review, quiz, and written exercises. Approximate times given below will vary somewhat due to the experience level of the students.

In a corporate training environment, the lecture, lesson review, and quiz should take approximately 50 minutes. The in-class exercise with a review of the results should take approximately 50 minutes. You may find that some lectures generate a lot of questions, so that they take a longer time. The in-class exercise may be shortened to make up the time. We do recommend always including a post-lesson quiz. It helps the retention factor quite a bit. The quiz with a review of results should only take 5 minutes.

In a college setting, the lecture, lesson review, and description of homework assignment should take one 50-minute lesson period. A second 50-minute lesson period is devoted to further explanation of the lecture material and to answer any questions about the homework or the lecture material. A third 50-minute lesson period may be used for the quiz, a review of the results, and a review of answers to the homework questions. Some colleges cover considerably more material in a semester, so this schedule could be condensed for those courses.

Recommended Books

Applying Use Cases, Second Edition: A Practical Guide
Geri Schneider & Jason P. Winters
Addison Wesley, 2001
ISBN: 0-201-70853-1

Topic Outline

Lesson 1: Getting Started

- Course Description
- The Business Analyst
- The Use Case Model
- A software development process
- History of Use Cases
- Course Example Project
- Project for Exercises
- Assignment for Lesson 1

Lesson 2: Identifying System Boundaries

- Identifying System Boundaries
- Identifying Actors
- Identifying Use Cases
- Assignment for Lesson 2

Lesson 3: The Use Case Model Survey

- What is a use case model survey
- Use case diagrams
- Views and packages
- Describing actors and use cases
- Describing packages
- Template Use Case Model Survey
- Assignment for Lesson 3

Lesson 4: Documenting Use Cases

- The basic use case
- Guidelines for writing the Use Case
- Updating the Use Case Diagram
- Use Case Specification Template
- Assignment for Lesson 4

Lesson 5: Handling complex use cases

- Repetition: For, While, and Repeat
- In Any Order ...
- Alternatives: IF, Alternative Flow
- Errors
- Finding Alternate Flows
- Interrupts
- Special requirements
- Assignment for Lesson 5

Lesson 6: Activity Diagrams

- Introduction to activity diagrams
- Activity diagram UML Notation
 - Action node
 - Control Flow
 - Initial and Final Nodes
 - Guard
 - Decision and Merge Nodes
 - Fork and Join Nodes
 - Activity Partition
 - Data flow
- Converting Use Case text to Activity Diagram
 - Repetition
 - Conditional
 - “In any order”
 - “At any time”
- Assignment for Lesson 6

Lesson 7: Level of Detail

- Determining the level of detail
 - Business process use cases
 - System use cases
- Relationship between use cases at different levels of detail
- Adding Use Case Levels
- Methods for adding details
 - Adding detail in text
 - Adding detail as paragraphs in outline
 - Adding detail using subordinate use cases
- Traceability between use cases
- Version Control
- Assignment for Lesson 7

Lesson 8: Advanced Use Cases

- Advanced Use Case Design
- Include
- Extend
- Generalization
- Interfaces
- Use Case Patterns
 - Login
 - CRUD
 - Online help
- Special actors
 - Time
 - Databases
- Assignment for Lesson 8

Lesson 9: Simple State Diagrams

(topic not covered in college quarter length classes)

- State diagram
- Identifying state-driven elements
- Basic notation
 - State
 - Initial State
 - Final State
 - Transition
- Transitions and events
- Forks and joins
- Completeness of the Use Case Model
- Assignment for Lesson 9

Lesson 10: Simple Sequence Diagrams

- Sequence Diagrams
- Scenarios
- Actor and System Objects
- Object Lifelines
- Use Case Behavior into Messages
- Common Mistake
- Replies to Messages
- Combined Fragment
- Coregion
- Sequence vs. Activity Diagrams
- Assignment for Lesson 10

Lesson 11: Class Diagrams

- Domain objects
- Finding domain objects
 - Review Use Cases
 - Ask domain experts
 - Noun/verb decomposition
 - Categorization
- Class diagrams
- Hierarchy of domain objects
- Class vs sequence diagrams
- Domain objects vs database items
- The relationship between domain objects and database items
- Assignment for Lesson 11

Lesson 12: Use Case Realizations

- Use Case Realization
- Collaboration
- Analysis Model
- Detailed Sequence Diagram
- Creating Objects in Computer Memory
- Only use Domain Objects
- Detailed Class Diagram
- Create Analysis Model
- Assignment for Lesson 12

Lesson 13: Reviewing Use Cases

- Reviewing Use Cases
- The Quick Use Case Review
- Review the Guidelines
- Test the Use Case with Scenarios
- Common Mistakes
 - Work flow on a use case diagram
 - Use case too small
 - Use case too large
 - Using vague terms
 - Business vs Technical Requirements
- Project Team Reviews
 - Requirements Analyst
 - Completeness
 - Potential problems
 - End users
 - Customers
 - Development Team
 - Flexibility
- Assignment for lesson 13

Lesson 14: Uses for Use Cases

(topic not covered in college quarter length classes)

- Aspects of Use Cases
- Requirements
- Analysis
- Architecture
- Design
- Test
- Documentation
- Project Planning
- Assignment for lesson 14

Lesson 15: Course Review

- Course Review
- Final Comments on Use Cases

Lesson 16: Jacobson's Business Process and OOSE Profiles

(This is an optional lesson for those needed a business process notation, or for those following the OOSE methodology. The two topics can be split if both are not desired.)

- UML Profiles
- Business Profile
 - Business Use Case Diagram
 - Business Object Diagram
 - Business Package Diagram
- Analysis Classes Profile
- Assignment Lesson 16

Reference Materials

- Books
- Websites
- Tools
- Courses

Glossary

Key terms defined in the lessons