

UML

1 Introduction to UML

Introduction to the Object–Oriented Paradigm

Encapsulation

Inheritance

Polymorphism

What Is Visual Modeling?

Systems of Graphical Notation

Booch Notation

Object Management Technology (OMT)

Unified Modeling Language (UML)

Understanding UML Diagrams

Business Use Case Diagrams

Use Case Diagrams

Activity Diagrams

Sequence Diagrams

Collaboration Diagrams

Class Diagrams

Statechart Diagrams

Component Diagrams

Deployment Diagrams

Visual Modeling and the Software Development Process

Inception

Elaboration

Construction

Transition

2 A Tour of Rose

What Is Rose?

Getting Around in Rose

Parts of the Screen

Exploring Four Views in a Rose Model

Use Case View

Logical View

Component View

Deployment View

Working with Rose

Creating Models

Saving Models

Exporting and Importing Models

Publishing Models to the Web

Working with Controlled Units

Using the Model Integrator

Working with Notes

Working with Packages

Adding Files and URLs to Rose Model Elements

Adding and Deleting Diagrams

Setting Global Options

Working with Fonts

Working with Colors

3 Business Modeling

Introduction to Business Modeling

Why Model the Business?

Do I Need to Do Business Modeling?

Business Modeling in an Iterative Process

Business–Modeling Concepts

Business Actors

Business Workers

Business Use Cases

Business Use Case Diagrams

Activity Diagrams

Business Entities

Organization Unit

Where Do I Start?

Identifying the Business Actors

Identifying the Business Workers

Identifying the Business Use Cases

Showing the Interactions

Documenting the Details

Creating Business Use Case Diagrams

Deleting Business Use Case Diagrams

The Use Case Diagram Toolbar

Adding Business Use Cases

Business Use Case Specifications

Assigning a Priority to a Business Use Case

Viewing Diagrams for a Business Use Case

Viewing Relationships for a Business Use Case

Working with Business Actors

Adding Business Actors

Adding Actor Specifications

Assigning an Actor Stereotype

Setting Business Actor Multiplicity

Viewing Relationships for a Business Actor

Working with Relationships

Association Relationship

Generalization Relationship

Working with Organization Units

Adding Organization Units

Deleting Organization Units

Activity Diagrams

Adding an Activity Diagram

Adding Details to an Activity Diagram

4 Use Cases and Actors

Use Case Modeling Concepts

Actors

Use Cases

Traceability

Flow of Events

Relationships

Use Case Diagrams

Activity Diagrams

Activity

Start and End States

Objects and Object Flows

Transitions

Synchronization

Working with Use Cases in Rational Rose

The Use Case Diagram Toolbar

Creating Use Case Diagrams

Deleting Use Case Diagrams

Adding Use Cases

Deleting Use Cases

Use Case Specifications

Naming a Use Case

Viewing Participants of a Use Case

Assigning a Use Case Stereotype

Assigning a Priority to a Use Case

Creating an Abstract Use Case

Viewing Diagrams for a Use Case

Viewing Relationships for a Use Case

Working with Actors

Adding Actors

Deleting Actors

Actor Specifications

Naming Actors

Assigning an Actor Stereotype

Setting Actor Multiplicity

Creating an Abstract Actor

Viewing Relationships for an Actor

Viewing an Actor's Instances

Working with Relationships

Association Relationship

Includes Relationship

Extends Relationship

Generalization Relationship

Working with Activity Diagrams

The Activity Diagram Toolbar

Creating Activity Diagrams

Deleting Activity Diagrams

Exercise

Problem Statement

Create a Use Case Diagram

5 Object Interaction

Interaction Diagrams

What Is an Object?

What Is a Class?

Where Do I Start?

Finding Objects

Finding the Actor

Using Interaction Diagrams

Sequence Diagrams

The Sequence Diagram Toolbar

Collaboration Diagrams

The Collaboration Diagram Toolbar

Working with Actors on an Interaction Diagram

Working with Objects

Adding Objects to an Interaction Diagram

Deleting Objects from an Interaction Diagram

Setting Object Specifications

Naming an Object

Mapping an Object to a Class

Setting Object Persistence

Using Multiple Instances of an Object

Working with Messages

Adding Messages to an Interaction Diagram

Adding Messages to a Sequence Diagram

Deleting Messages from a Sequence Diagram

Reordering Messages in a Sequence Diagram

Message Numbering in a Sequence Diagram

Viewing the Focus of Control in a Sequence Diagram

Adding Messages to a Collaboration Diagram

Deleting Messages from a Collaboration Diagram

Message Numbering in a Collaboration Diagram

Adding Data Flows to a Collaboration Diagram

Setting Message Specifications

Naming a Message

Mapping a Message to an Operation

Setting Message Synchronization Options

Setting Message Frequency

End of a Lifeline

Working with Scripts

Switching Between Sequence and Collaboration Diagrams

Two-Pass Approach to Interaction Diagrams

Exercise

Problem Statement

Create Interaction Diagrams

6 Classes and Packages

Logical View of a Rose Model

Class Diagrams

What Is a Class?

Finding Classes

Creating Class Diagrams

Deleting Class Diagrams

Organizing Items on a Class Diagram

Using the Class Diagram Toolbar

Working with Classes

Adding Classes

Class Stereotypes

Analysis Stereotypes

Class Types

Interfaces

Web Modeling Stereotypes

Other Language Stereotypes

Class Specifications

Naming a Class

Setting Class Visibility

Setting Class Multiplicity

Setting Storage Requirements for a Class

Setting Class Persistence

Setting Class Concurrency

Creating an Abstract Class

Viewing Class Attributes

Viewing Class Operations

Viewing Class Relationships

Using Nested Classes

Viewing the Interaction Diagrams That Contain a Class

Setting Java Class Specifications

Setting CORBA Class Specifications

Working with Packages

Adding Packages

Deleting Packages

Exercise

Problem Statement

Creating a Class Diagram

7 Attributes and Operations

Working with Attributes

Finding Attributes

Adding Attributes

Deleting Attributes

Setting Attribute Specifications

Setting the Attribute Containment

Making an Attribute Static

Specifying a Derived Attribute

Working with Operations

Finding Operations

Adding Operations

Deleting Operations

Setting Operation Specifications

Adding Arguments to an Operation

Specifying the Operation Protocol

Specifying the Operation Qualifications

Specifying the Operation Exceptions

Specifying the Operation Size

Specifying the Operation Time

Specifying the Operation Concurrency

Specifying the Operation Preconditions

Specifying the Operation Postconditions

Specifying the Operation Semantics

Displaying Attributes and Operations on Class Diagrams

Showing Attributes

Showing Operations

Showing Visibility

Showing Stereotypes

Mapping Operations to Messages

Mapping an Operation to a Message on an Interaction Diagram

Exercise

Problem Statement

Add Attributes and Operations

8 Relationships

Relationships

- Types of Relationships

- Finding Relationships

Associations

- Using Web Association Stereotypes

- Creating Associations

- Deleting Associations

Dependencies

- Creating Dependencies

- Deleting Dependencies

Package Dependencies

- Creating Package Dependencies

- Deleting Package Dependencies

Aggregations

- Creating Aggregations

- Deleting Aggregations

Generalizations

- Creating Generalizations

- Deleting Generalizations

Working with Relationships

- Setting Multiplicity

- Using Relationship Names

Using Stereotypes

Using Roles

Setting Export Control

Using Static Relationships

Using Friend Relationships

Setting Containment

Using Qualifiers

Using Link Elements

Using Constraints

Exercise

Problem Statement

Adding Relationships

9 Object Behavior

Statechart Diagrams

Creating a Statechart Diagram

Adding States

Adding State Details

Adding Transitions

Adding Transition Details

Adding Special States

Using Nested States and State History

Exercise

Problem Statement

Create a Statechart Diagram

10 Component View

What Is a Component?

Types of Components

Component Diagrams

Creating Component Diagrams

Adding Components

Adding Component Details

Adding Component Dependencies

Exercise

Problem Statement

11 Deployment View

Deployment Diagrams

Opening the Deployment Diagram

Adding Processors

Adding Processor Details

Adding Devices

Adding Device Details

Adding Connections

Adding Connection Details

Adding Processes

Exercise

Problem Statement

Create Deployment Diagram

12 Introduction to Code Generation and Reverse Engineering Using Rational Rose

Preparing for Code Generation

Step One: Check the Model

Step Two: Create Components

Step Three: Map Classes to Components

Step Four: Set the Code-Generation Properties

Step Five: Select a Class, Component, or Package

Step Six: Generate Code

What Gets Generated?

Introduction to Reverse Engineering Using Rational Rose

Model Elements Created During Reverse Engineering

Round-Trip Engineering

Summary

13 Java Code Generation and Reverse Engineering

Overview

Introduction to Rose J

Beginning a Java Project

Selecting a Java Framework

Linking to IBM VisualAge for Java

Linking to Microsoft Visual J++

Java Code-Generation Properties

Project Properties

Class Properties

Attribute Properties

Operation Properties

Module Properties

Role Properties

Generating Code

Generated Code

Classes

Attributes

Operations

Bidirectional Associations

Unidirectional Associations

Associations with a Multiplicity of One to Many

Associations with a Multiplicity of Many to Many

Reflexive Associations

Aggregations

Dependency Relationships

Generalization Relationships

Interfaces

Java Beans

Support for J2EE

EJBs

Servlets

JAR and WAR Files

Automated J2EE Deployment

Reverse Engineering

Summary

14 Rose Data Modeler

Object Models and Data Models

Creating a Data Model

Logic in a Data Model

Adding a Database

Adding Tablespaces

Adding a Schema

Creating a Data Model Diagram

Creating Domain Packages and Domains

Adding Tables

Adding Columns

Setting a Primary Key

Adding Constraints

Adding Triggers

Adding Indexes

Adding Stored Procedures

Adding Relationships

Adding Referential Integrity Rules

Working with Views

Generating an Object Model from a Data Model

Generating a Data Model from an Object Model

Generating a Database from a Data Model

Updating an Existing Database

Reverse Engineering a Database